LIFELONG LEARNING IN MASTER'S EDUCATION

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by

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A thesis submitted

to the School of Graduate Studies

in partial fulfillment of the

requirements for the

Degree of Master of Education (Educational Leadership Studies)

Faculty of Education

Memorial University of Newfoundland

December, 2001

St. John's Newfoundland

Abstract

This study examines earning a Canadian Master's degree as a lifelong learning pursuit. Data from Statistics Canada's, national, *1997 Survey of 1995 Graduates* are used to profile 1995 Master's graduates by graduation age and gender using the age groups, under 25, 25 - 29, 30 - 34, 35 - 39, 40 - 44, 45 - 49 and, 50 and over. Cross-tabulations and chi-square tests are utilized to identify significant relationships and trends. Research questions addressed are: how did the study profiles of Master's graduates by age group and their gender subgroups, differ by region, discipline, reasons for enrolling, study mode (part-time, full-time or combination) and/or educational funding sources? Additionally: how did the post-graduation profiles of Master's graduates by age group and their gender sub-groups, differ by accumulated debt, job search experiences, job characteristics, job–education match, income and/or plans to pursue a Ph.D.?

It was found that as age increased, so did the percentage of graduates who were female, studied part-time, had no difficulty in the job search, supervised the work of other employees, and earned $50,000 or more per year. The percentage of graduates who said the chance to earn a good income was a very important reason for enrolling and who utilized scholarships decreased as graduation age increased. Graduates aged 40 and over were concentrated in the Humanities, Social Science, Education and Commerce related disciplines. Graduates from Ontario and Quebec (both genders) and males from the Western Provinces and Territories were typically younger than those from other Canadian regions. Less than 35% of 1995 Master's graduates in any age group indicated that they planned to pursue a Ph.D.

Acknowledgements

The quality of this thesis could not have been attained without the guidance of Dr. Dennis Treslan, supervisor for this study. In particular, Dr. Treslan was always available to discuss new ideas, enthusiastic, thorough and expeditious in his pursuit to assist the creation of the best end-product possible. Dr. Treslan's efforts always extended beyond the minimum and even included encouraging and arranging for input from other faculty members. Getting to know Dr. Treslan has also provided me with an irreplaceable lifelong learning and career role model. A second thank you goes to Gerry White for providing technical advisement as well as for taking the time to discuss the project in general. Dr. Henry Schultz, Dr. Amarjit Singh and Dr. George Hickman took the time to read drafts of this study and provide valuable insight. Fronie Squibb provided typing and copying assistance. Inspiring coursework taken under Dr. Joan Whelan and Dr. Clar Doyle helped develop the research topic.

The scope and quality of the sample utilized for this study would not have been possible without Statistic's Canada's *Data Liberation Initiative* (Statistics Canada, 2001a). Through this program, I was able to access national, high caliber data to solicit results that are representative of and relevant to a much greater number of individuals than would otherwise have been possible. The data liberation initiative is a forward thinking program, one that is likely to benefit many more students in the future. Personal assistance was provided through the provisions for the Statistics Canada and Canadian Educational Researchers Association Research Prize in Education. The guidance of David Price was extremely helpful.

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List of Abbreviations

CAGS	Canadian Association of Graduate Schools
CICIC	Canadian Information Centre for International Credentials
CMEC	Council of Minister's of Education Canada
DLI	Data Liberation Initiative
FOG	Follow-up Graduates' Survey(s)
HRDC	Human Resources Development Canada
IDLS	Internet Data Library System
NGS	National Graduates' Survey(s)
NRC	National Research Council
NSERC	National Science and Engineering Research Council
SSD	Special Surveys Division
UNESCO	United Nations Education Science and Cultural Organization

Chapter I: Introduction to the Study

Master's education and Adult Education were once two separate entities with dissimilar clients. The work of Adult Education assisted adults of all ages to develop their potential through job retraining and social activism. Master's education provided advanced teaching and learning as well as research opportunities in an extended, but initial, university education. In recent years, however, the pool of Canadians holding undergraduate degrees has increased and diversified. Since the 1970s, female participation in post-secondary education (Clark, 2000), as well as the number of jobs requiring a degree (Stewart, 2001), have dramatically increased. To remain competitive in the labour market, greater numbers of high school graduates as well as older adults, attended colleges and universities to pursue post-secondary qualifications (Uhl & MacKinnon, 1992). As post-secondary graduates successfully entered and re-entered the job market, governments and citizens adopted lifelong learning as a strategy to manage labour market fluctuation (Barker, 1998).

The lifelong learning practices of Canadians have continued to evolve, however. In terms of university education, the undergraduate degree is now most often pursued directly or soon after high school (Taillon & Paju, 1999). Divergently, graduate degrees are more often completed later in the lives of individuals (Little & Lapierre, 1996; Taillon & Paju, 1999; Baseline Market Research, 1998). *Table 1* shows the distributions of 1995 Canadian university graduates by age group.

Table 1

The distribution of Canada's 1995 university graduates by age group.

Age Group	University Graduates (%)		
	Bachelor's	Master's	Doctoral
	n = 13,218	n = 6,638	n = 1,968
Under 24	60	13	--
25 - 29	19	35	20
30 - 34	7	18	35
35 - 39	5	12	20
40 and over	9	22	25

Source: Taillon & Paju, 1999

Given multi-age participation, it is not surprising that the growth rate of Master's graduates (34.2%) and Doctoral graduates (108%) surpassed that of Bachelor's graduates (28.7%) over recent years (Finnie, 1999). Nevertheless, Canadians most often pursue Master's degrees without continuing to the Ph.D. level (Taillon & Paju, 1999; CAGS, 2000). As a result, there are many more students participating at the Master's than Doctoral level. From 1972 to 1998, the number of Master's students rose from 33,170 to 69,850 while the number of Doctoral students grew from 13,484 to 26,138 (CAGS, 2000, Table 3). In 1998, this translated into 21,678 Master's and 3,945 Doctoral degrees awarded (CAGS, 2000, Table 25).

For the higher numbers of Canadians earning Master's degrees, such action appears to be beneficial. In terms of labour market competition, Master's graduates often "obtain jobs that require lower levels of education [but do not] suffer a large decrease in earnings...[and] still use their skills to a large extent" (Frenette, 2000, p. 10). Graduates of this level also enjoy lower unemployment and underemployment than Bachelor's graduates and of all educational levels, including the Ph.D., earn the highest salaries (Taillon & Paju, 1999). Master's graduates are also most likely to influence pay, promotion, budgeting and staffing decisions, and have the freedom to organize their own work (Butlin & Oderkirk, 1997).

Though interest in Master's degrees has clearly expanded, individuals of varying age are participating, and several benefits of earning the degree have been cited, Master's education as a lifelong learning pursuit had not been investigated. Whether participation patterns by age group were similar across disciplines or if the low unemployment rates, high earnings and job characteristics were experienced equally by graduate age cohorts was not known. With an interest in these topics, this study was designed to describe and compare the experiences of Canada's multi-aged Master's graduates. Findings showed significant differences existed according to the age at which a Master's degree was pursued. Variation was apparent in terms of characteristics of the study and job search experience, job-education match, job characteristics, income levels and interest in earning a Ph.D. Gender, field of study and region also played pertinent roles in determining the lifelong learning patterns and experiences of Master's graduates.

Statement of the Problem

To obtain an increased understanding of Canadian Master's education in the context of lifelong learning, two research questions were developed. Specifically, these were:

1. How did the study profiles of Master's graduates, by age group and their gender subgroups, differ by region, reasons for enrolling, field of study, study mode (part-time, full-time or combination) and/or educational funding sources?
2. How did the post-graduation profiles of Master's graduates, by age group and their gender sub-groups, differ by accumulated debt, job search experiences, job characteristics, job–education match, earnings and/or plans to pursue a Ph.D.?

Theoretical Framework

The idea that individuals experience life differently as they age chronologically has a long theoretical tradition (Lemme, 1995: Morgan & Kunkel, 2001). Stage theorists such as "Freud, Erikson, Havighurst and Levinson...maintained that all of us, at about the same time in our lives, experience the same events, problems or challenges - that there are universal sequences of change" (Lemme, 1995, p. 44). Nevertheless, aspects of stage theories have been criticized for obscuring variation in individual lives and downplaying the role of social and historical contexts (Lemme, 1995). In 1968, Neugarten suggested that "an internalized calendar learned from society...tells us when in our lives we should be doing what" (as cited in Lemme, 1995, p. 65). Further complexity was also acknowledged by proposing that "as the socio-historical context changes, [so will]

society's views of time and age" (Neugarten, 1968 as cited in Lemme, 1995, p. 65-66). Over recent decades, an example of this has occurred. Precisely, "the power of age norms over the way people conceptualize and live their lives has been greatly reduced" (Lemme, 1995, p. 67). This trend has included greater variation in marrying and child bearing ages, and of particular interest to this study is that, "not all students attend formal education programs at a typical age" (CMEC, Statistics Canada & HRDC, 1999, Section 3.3, ¶ 1). Several circumstances have contributed to this shift.

Hatton's (1997) *Pure Theory of Lifelong Learning* cites technological advancement, increased competition in the manufacturing and service sectors, as well as more aggressive and freer trade as drivers of the need for lifelong learning in today's society. The results of these impacts have created greater and growing access to information, a faster pace of change and increased rivalry between organizations as well as between individuals at the job level (Hatton, 1997). The idea that people need to learn more at a higher level and throughout the life span "has become the means of attaining and maintaining the flexibility that is considered necessary in response to the technological and socio-economic change required" (Edwards & Usher, 2001, p. 279). "It is generally accepted that we are increasingly moving toward a 'knowledge-based economy,' in which greater importance is attached to having a highly skilled labour force" (Finnie & Lavoie, 1997, p. 11).

The rhetoric and reality associated with the need for lifelong learning can be considered a significant phase of contemporary times or a "period effect...likely to have an impact on everyone in society" (Morgan & Kunkel, 2001, p. 43). However, difficulties

with lifelong learning strategies have emerged in that "one can never be prepared enough" (Edwards & Usher, 2001, p. 283) and both the need to learn and the means to accomplish it "encompass multiplicity and diversity of practices" (Edwards & Usher, 2001, p. 275).

As suggested by the theories of aging, individuals of similar age and experience have been found to understand and react to period effects in a like manner, called the cohort effect (Morgan & Kunkel, 2001). For instance,

> Young cohorts, those most likely to be called upon to fight in the event of war, are likely to experience a life-changing effect from the war. At the same time, the birth cohorts who are parents and grandparents of these fighting-age adults, while doubtless affected by the war... are unlikely to feel the same magnitude of effect on their lives from the same historical event. (Pavalko & Elder, 1990 as cited in Morgan & Kunkel, 2001, p. 43)

In the case of lifelong learning, cohort effects have also been noted. Specifically, individuals of younger, working ages have been shown to participate more, while older adults participate less (Tuijnman et al., 2001; CMEC, 1997).

In order to determine the most effective human resource development strategies for Canadian citizens and government, more study of lifelong learning patterns and associated outcomes for specific groups is required (Social Sciences & Humanities Research Council Canada, 2001). The study of cohort effects is of particular importance in Canada since the aging population requires a heavier reliance on retraining older adults to meet labour market needs (Murray & Zeesman, 2001).

Significance of the Study

This study provides insight into the question, "what is the role of graduate level education in the new 'knowledge based economy,' and are the relatively large increases at the Master's...level a positive development in this regard, or simply a case of 'too little too late'?" (Finnie, 1999, p. 21). Knowledge gained also contributes to a better understanding of Canadian lifelong learning trends and practices, educational financing, as well as student flows and transitions, which are policy issues identified as critical in Statistics Canada's (1997b) Strategic Plan. In addition, this research is supportive of the Social Sciences and Humanities Research Council of Canada's (SSHRC, 2001) objectives to "map patterns of [lifelong learning] participation in formal...settings, ...assess the implications of lifelong learning for gender, assess...the impacts...of lifelong learning [and]...understand the linkages between formal education and lifelong learning" (Social Sciences and Humanities Research Council of Canada, 2001).

This information should also help individuals interested in pursuing Master's degrees make informed choices about the value and timing of integrating this level of study in their lives. As well, the results could assist strategic planning by universities and/or the Government of Canada, which has set a "goal of having at least one million more adults take advantage of learning opportunities during the next five years" (Chretien, J., 2001, ¶ 12). Lastly, further study in the area of education and employment relationships is provided as requested in the recent reports by the Conference Board of Canada (2001; 2000), Council of Ministers of Education Canada (2001), Levin (1998) and Statistics Canada (1997b).

Background

Raw data used in this study originates from the *Survey of 1995 Graduates in 1997*, the most recent National Graduates' Survey. These data are obtainable by Canadian universities through Statistics Canada's *Data Liberation Initiative* (Statistics Canada, 2001a). The following sections provide details of the National Graduate Survey with particular reference to the 1997 data, as well as information regarding the Data Liberation Initiative. Further information is presented in the "Methodology".

The National Graduates' Surveys

The National Graduates Surveys (NGS), as the name implies, are cross-Canada surveys of the nation's graduates. Statistics Canada, on behalf of Human Resources Development Canada (HRDC), conducts them. These surveys gather a multitude of information from graduates of Skilled Trade, College, Bachelor, Master's and Doctoral programs, two years after graduation, and consider over 1100 variables. NGS' have been conducted for the graduation years 1976, 1982, 1986, 1990 and 1995. Follow-up of Graduates' surveys (FOG) have also been executed four years after graduation for 1982, 1986 and 1990 graduates.

The 1997 NGS' main objective was to, "obtain information on the labour market experiences of graduates entering the labour market" (Special Survey Division [SSD], n.d., p. 5). Other objectives included gathering information particular to target groups such as youth, women, native people and the disabled; education and labour market relationships; the exposure of graduates to additional learning opportunities; school to

work transitions; post-secondary education financing; and knowledge and skills (SSD, n.d., p. 5). The necessity of obtaining information for use in deriving supply and demand projections and career counseling were also significant.

> The main content of the survey contains data on:
>
> Program characteristics; activities before completing studies; information on jobs held since graduation; financial and loan information; reasons for enrolling in post-secondary education; satisfaction with education; activities since completing post-secondary studies; employability skills; the link between education experience and outcomes; additional training after graduation; and socio-economic background. (SSD, n.d., p. 4)

As one might imagine, the NGS' base populations are vast. From the 22,850 Master's (1995) graduates that universities reported to Statistics Canada for the 1997 study, 9,407 were selected for the survey and an 81.1 % response rate was achieved (SSD, n.d., p. 34). In 1999, *The Class of '95: Report of the 1997 National Survey of 1995 Graduates* (Taiilon & Paju, 1999) was released, presenting an overview of the 1997 findings.

The Data Liberation Initiative

The Data Liberation Initiative (DLI) provides Canadian academic institutions with access to a large collection of Statistics Canada's electronic data files and databases on CD-ROM, File Transfer Protocol (FTP) or the Web for the purposes of teaching and research.

> The DLI is a co-operative effort among the Humanities and Social Science Federation of Canada (HSSFC), the Canadian Association of Research Libraries (CARL), the Canadian Association of Public Data Users (CAPDU), the Canadian Association of Small University Libraries (CASUL), Statistics Canada and other government departments. (Statistics Canada, 2001a)

Under the DLI, data are purchased by the institution, providing timely and affordable access for students, faculty and staff. Other goals of the DLI include increasing analysis and debate of Canadian issues and expanding the use of federal funds spent on data collection (Memorial University, 2001). The structure of the DLI is still evolving, but, at present, the University of Western Ontario disseminates Internet based data through its *Internet Data Library System* (IDLS) [University of Western Ontario, 2001]. Students from participating educational institutions can access this system through their library computer networks. Once accepted to the system, users must agree to the terms of a licensing agreement which states files cannot be used for commercial purposes. User guides and raw data files can then be downloaded from the IDLS Web-site (University of Western Ontario, 2001).

Data used for this study are searchable in the IDLS (University of Western Ontario, 2001) under the heading *Survey of the Graduates of 1995 in 1997.* This provides access to the files: *Select Variables*, *User's Guide*, *Coefficient Of Variants Tables*, *Questionnaire*, *Occupational Codes*, *Academic Discipline Codes*, *List Of Post-secondary Institutions*, *Sampling Response*, *University Size And Sample*, *Codebook* and *File Description* (University of Western Ontario, 2001). It should be noted that *Select Variables,* contains only the variables approved for general use. Others are suppressed from the IDLS system for reasons of confidentiality.

Delimitations

This study investigated lifelong learning patterns in Master's education. However, the scope was limited to graduates of Canadian public educational institutions. In addition, the most recent national data on Canada's graduates available through the DLI was obtained in 1997, making the information used for this study four years old. Nonetheless, data from the 1995 as well as 1992, 1990 and/or previous NGSs and FOGs continue to be utilized in recent national reports (For example, Butlin, 2001; Finnie, 2000). Without the use of Statistics Canada's data made available through the DLI, a national Canadian scope for this study would not have been possible.

Limitations

Although Statistics Canada achieved an acceptable response rate for the *1997 Survey of 1995 Graduates*, "somewhat different figures might have been obtained if a complete census of all 1995 graduates had been taken" (SSD, p. 35). In an effort to obtain a representative sample, however, complex, random and stratified sampling methodologies were employed. Statistics Canada also requires researchers using NGS data to report measures of sampling error for data calculations. In addition,

> Errors, which are not related to sampling, may occur at almost every phase of a survey operation. Interviewers may misunderstand instructions, respondents may make errors in answering questions, the answers may be incorrectly entered on the questionnaire and errors may be introduced in the processing and tabulation of data. (SSD, n.d., p. 35)

Though, "over a large number of observations, randomly occurring errors will have little effect on estimates derived from the survey,...errors occurring systematically

[nonetheless] will contribute to biases in the survey estimates" (SSD, n.d., p. 36). To adequately prevent non-sampling errors, several quality assurance measures were undertaken by Statistics Canada. These included:

> The use of highly skilled interviewers, extensive training of interviewers with respect to the survey procedures and questionnaire, observation of interviewers to detect problems of questionnaire design or misunderstanding of instructions, procedures to ensure that data capture errors were minimized and coding and edit quality checks to verify the processing logic. (SSD, p. 36)

In terms of data analysis, the use of statistical software packages to manipulate data from the DLI can result in slightly different variance estimates than would Statistics Canada's master files. This is caused by the fact that

> While many...procedures found in statistical packages allow weights to be used, the meaning or definition of the weight in these procedures differ from that which is appropriate in a sample survey framework, with the result that while in many cases the estimates produced by the packages are correct, the variances that are calculated are poor...The calculation of truly meaningful variance estimates requires detailed knowledge of the design of the survey. Such detail cannot be given in this microdata file because of confidentiality. (SSD, n.d., p. 42to43)

To allow users to obtain the most accurate variances possible, Sampling Variability Tables were produced by Statistics Canada and are, therefore, utilized in this study to estimate coefficients of variation. Details of this are explained in Chapter Three.

Additionally, the effects of unique Master's programs, personality factors, attitude and socio-economic status prior to enrolling on the experiences and outcomes of 1995 Master's graduates were not assessed. There were no questions in the NGS to collect data on these topics. By using random, stratified sampling methods, however, the results of the NGS should control for such general factors. Nevertheless, the ways in which these aspects might have affected the outcomes cannot be known.

Definition of Terms

Adult Education

Denotes all educational processes followed by adults, whatever the content, level, and method, that supplement or replace initial education. This may include part-time [or full-time] enrolment in day schools, evening schools, correspondence schools, [university including graduates school] and so on. Training offered may be of a credit or a non-credit nature and could be taken for job-related or personal interest reasons. (CMEC, 1997, Glossary section)

Adult Learner

Adult learners are generally defined as anyone aged 17 and over enrolled in a structured education or training activity. These learners are older than the compulsory school attendance age (Statistics Canada, 1997b, p. 71).

Bachelor Degree

These include all Bachelor's degrees so named, whether specialized or general (CMEC, Statistics Canada & HRDC, 1999, Glossary section). When completed full-time without co-op placements, Bachelor's degrees are three or four year university programs.

Bursary

A non-repayable grant of money, bursaries are awarded primarily based on financial need, but academic achievement is also considered (Edge Interactive Publishing Inc. 2001, Glossary section).

Blue Collar Occupations

Includes such occupations as construction, fabricating, farming, fishing, forestry, materials handling, mining, processing, service transportation and other crafts (Statistics Canada, 1997b, p. 71).

Data Liberation Initiative

Provides Canadian academic institutions with access to a large collection of Statistics Canada's electronic data files and databases on CD-ROM, File Transfer Protocol (FTP) or the Web for the purposes of teaching and research (Memorial University, 2001).

The DLI is a co-operative effort among the Humanities and Social Science Federation of Canada (HSSFC), the Canadian Association of Research Libraries (CARL), the Canadian Association of Public Data Users (CAPDU), the Canadian Association of Small

University Libraries (CASUL), Statistics Canada and other government departments. It has been approved as a five-year pilot. (Statistics Canada, 2001)

Doctoral Degree

These are the highest academic degrees conferred by a university...First professional degrees with "doctor" in the title, such as M.D. and D.D.S. are not included here; they are included under bachelor's and first professional degrees (CMEC, Statistics Canada & HRDC, 1999, Glossary section).

Domain of Interest

Those 1995 graduates from the responding sample [for the 1997 NGS]...who were still living in Canada in May-June-July 1997, and provided complete or partial information (SSD, n.d., p. 31).

Educational Attainment

The highest level of formal education completed by an individual (CMEC, Statistics Canada & HRDC, 1999, Glossary section).

Fellowship

A monetary prize awarded to a student pursuing studies usually beyond the baccalaureate level. Usually one of the criteria is academic average (Edge Interactive Publishing Inc. 2001, Glossary section).

Field of study

The predominant discipline, area of learning, or subject specialization of studies (CMEC, Statistics Canada & HRDC, 1999, Glossary section).

Formal education

Education and training activities with an identifiable structured plan and clear objectives geared to the development of the learner's skill and competence, from which accreditation or some kind of formal recognition of completion is received (CMEC, Statistics Canada & HRDC, 1999, Glossary section).

Full-time Students

Given that there is no commonly accepted definition of a part-time student, Statistics Canada reports full-time or part-time registration status as supplied by each respondent (CMEC, Statistics Canada & HRDC, 1999, Glossary section).

Full-time Employment

Jobs at which the individual worked 30 or more hours per week (Finnie, 1999).

Grant

A non-repayable sum of money that is given based primarily on financial need, but academic achievement may also be considered. Usually, official documentation describing your financial situation is required when applying (Edge Interactive Publishing Inc. 2001, Glossary section).

Informal Learning

The lifelong process whereby an individual acquires attitudes, values, skills, and knowledge from daily experience, educative influences, and other resources in his/her environment. These learning experiences are not structured in the form of a class under the direction of a teacher nor organized in a progressive sequence. They are not intended to be recognized by a formal award. (CMEC, 1997, Section: Glossary)

Internet Data Library System

The University of Western Ontario's, *Internet Data Library System* (IDLS) (University of Western Ontario [UWO], 2001) is used to disseminate information for the Data Liberation Initiative to staff and students from participating educational institutions (Memorial University, 2001).

Internship

Describes a professional/educational experience conducted in a non-university setting (Edge Interactive Publishing Inc. 2001, Glossary section).

Labour Force Status

This variable classifies the working age population according to their connection to the labour force. A person may be either employed (full-time or part-time), unemployed, or not in the labour force. The Canadian labour force, or the pool of available workers, is made up of the first three classifications, full-time and part-time workers, and the unemployed. (CMEC, 1997, Section: Glossary)

Lifelong Education

The concept that education is not a once-and-for-all experience that is confined to the initial cycle of full-time formal education commenced in childhood. Rather it is seen as a

process that continues throughout the entire life cycle and responds to different requirements throughout the working and life cycles. (CMEC, 1997, Section: Glossary)

Lifelong Learning

The concept that learning increasingly needs to occur throughout the life span. This idea responds to the different requirements as well as interests that will occur throughout the working and non-working lives of individuals in our current society. Learning can be accomplished through a variety of formal education experiences or informal learning opportunities. (Barker, 1998; CMEC, 1997)

Loan

Awarded as financial assistance that must be repaid (Edge Interactive Publishing Inc. 2001, Glossary section).

Master's Degree

These include all university degrees so named except the Master's of Divinity, which is considered a first professional degree (CMEC, Statistics Canada & HRDC, 1999, Glossary section).

Mobility

Student mobility [is] the movement of students between jurisdictions for the purpose of pursuing post-secondary studies...Graduate mobility [is] the movement of graduates away from their province of study (CMEC, Statistics Canada & HRDC, 1999, Glossary section).

Part-time Employment

Part-time jobs are defined as those at which the individual worked less than 30 hours per week to a standard definition (Finnie, 1999, p. 87).

Part-time Study

Given that there is no commonly accepted definition of a part-time student, Statistics Canada reports full-time or part-time registration status as supplied by each respondent (CMEC, Statistics Canada & HRDC, 1999, Glossary section).

Post-secondary Education

Post-secondary education is provided by degree-granting institutions, commonly called universities, and by non-degree granting institutions, which are typically referred to as

colleges, community colleges, CEGEPs, or institutes of technology (Canadian Information Centre for International Credentials, 1996 – 1997, Governance and Finance section).

Program

A selection of courses taken for credit towards a degree, diploma, or certificate (CMEC, 1997, Section: Glossary).

Scholarship

A non-repayable sum of money awarded to a student to help finance further education. Most scholarships are based on merit in areas ranging from academic achievement to athletics. Usually, scholarships are not based on financial need (Edge Interactive Publishing Inc. 2001, Glossary section).

Training

The systematic development of the attitudes, knowledge, and skill patterns of an individual in order that he/she may perform a specific task at a particular level of competence (CMEC, 1997, Section: Glossary).

White Collar Occupations

An occupational classification which includes people in the artistic, clerical, managerial, medical, natural science, religion, sales, social science and teaching occupations (Statistics Canada, 1997, p. 77).

Summary

Adults pursue Master's degrees at various ages (Little & Lapierre, 1996; Baseline Market Research, 1998; Taillon & Paju, 1999), yet, whether study patterns and labour market outcomes varied by graduation age was not known. This study profiles Master's graduates by age group and gender in order to inform future considerations of the increasing numbers of individuals eligible to pursue Master's degrees as well as to aid government and university planners. Data from Statistics Canada's *1997 Study of 1995 Graduates* (University of Western Ontario, 2001) was utilized.

Chapter II: Review of Research and Related Literature

Introduction

Adhering to the view that, "the social, geographical, political and economic context within Canada at any given time, determines not only what adults learn, but why and how" (Draper, 2001, p. 21), this review begins by outlining how these aspects historically affected the development of Canadian Master's education. By doing so, it is hoped that the systems, policies, enrollment and roles of current Canadian Master's education can be better understood. Since the thrust of this study is an analysis of Master's education in the context of lifelong learning, significant events and elements of the adult education and lifelong learning movements are also included. The first section describing these milestones is entitled, "The Evolution of Master's Education in Canada", in which a chronological analysis of the literature pertaining to Master's Education and the parallel movements of adult education and lifelong learning in Canada is provided. Eventual points of convergence between these philosophies and their resulting systems are emphasized. A second section details the current literature and research related to Master's education and lifelong learning in Canada. This section begins by outlining literature that seeks to define and provide a rationale for lifelong learning in Canada's current and emergent society. Subsections on the roles and actions of government, universities and individuals related to lifelong learning follow. Finally, summaries of current research on Master's graduates and participants of adult education regarding each variable to be investigated further in this study are presented.

Very little academic literature focusing specifically on Master's education has been produced in Canada. Nevertheless, the Canadian situation improved immensely in the late 1970s with the emergence of Statistics Canada's National Graduate Surveys. An additional source of statistics on graduate enrollment and awarded-degrees is produced by the Canadian Association of Graduate Schools (CAGS, 2000). No qualitative, national study on Master's Education such as Conrad, Haworth and Millar (1993) provided in the United States has ever been done in Canada. Much of the information in the following sub-sections, then, has been derived from the aforementioned sources, as well as from texts and research reports in the areas of higher education, adult education, lifelong learning and women in higher education.

The Evolution of Master's Education in Canada

1845 – 1915

In 1845, King's College of the University of Toronto awarded the first three Master's degrees in what would become Canada (Spinks, Arlt & Hare, 1966). It was not until the 1891 – 1892 school year, however, that the first (recorded) woman enrolled as a Master's student (Harris 1976). Eminently, the requirements of the first Canadian Master's degrees varied to a large extent.

> Sometimes as at Victoria, the M.A. was granted to a B.A. of three years' standing who submitted a letter of application and 'whose mental improvement and moral character have appeared satisfactory to the authorities of the university,' but normally, as at McGill, the B.A. of three years' standing submitted a thesis 'on any literary, scientific or professional subject approved by the Faculty. (Harris, 1976, p. 75).

Further, and not surprisingly for a newly established country, universities in Canada were originally focused on teaching and learning at the undergraduate level (Gingras, 1989). Though research is now considered a defining feature of a university, it had neither the facilities nor the funding to take place at this stage (Gingras, 1989). During these years, Canadian scholars traveled to Europe or the United States to pursue graduate school (Gingras, 1989; Spinks, Arlt & Hare, 1966). Some American universities such as Johns Hopkins, offered scholarships to promising graduate students regardless of nationality (Gingras, 1989). Consequently, in the period 1875 – 1900, almost 300 Canadians were enrolled in the United States (Gingras, 1989). This cross-border situation created Canada's first brain drain, as many scholars did not return. Nonetheless, some of the Ph.D.s working in Canada's universities as professors had high quality, international experience and fought for research to become a part of university functions here (Gingras, 1989).

Still, Canadian programs took time to develop a firm structure and student following. As a result, a majority of students continued to study abroad until after World War I (Gingras, 1989). In an attempt to remedy the situation, the University of Toronto established a doctoral program in 1897, followed by McGill in 1906 (Gingras, 1989; Aldrich, 1991). As the structure of Ph.D. programs evolved, so did that of Master's degrees -- specifically, a research component was added (Gingras, 1989). By 1915,

> The standards and requirements for the Master's degree were basically the same from one end of the country to the other…Hence, throughout Canada…the normal requirement for the M.A. was an Honours B.A. (or B.Sc.), a year of full time study in a particular subject, and a thesis. (Harris, 1976, p. 309)

Notably, the development of graduate programs in Canada was strongly influenced by the United States (Gingras, 1989; Cude, 1987; Holmes, 1992). The result of this was that, academically, the Master's degree was judged as inferior to the Doctorate (Cude, 1987). Eventually, considerable emphasis was also placed upon course work (Holmes, 1992) and administration was overseen by departments of graduate studies (Gingras, 1989).

For adults engaged in learning outside the university in this period, there were "study groups, institutes and associations devoted to educational and cultural matters" (Selman, 1995, p. 64-65). In 1887, Queen's, followed soon after by McGill, Toronto, Alberta and Saskatchewan, was the first university to offer courses specifically for adults beyond the initial education cycle, called extension courses (Selman, 1995, 2001). These courses, like graduate studies, represented a specialized function of the university. The emphasis of extension courses, however, was traditionally placed on responding to the local need for adult academic upgrading, training, and/or personal interest areas (Selman, 2001). By comparison, the purpose of pursuing a Master's degree was, and remains, to acquire acute comprehension of scholarly consensus' in an academic field of study with the potential for innovative work (Cude, 1987). Though elements of these purposes may have converged, the clientele in terms of age and socio-economic status did not. Prior to World War II, graduate "students were younger, wealthier and predominantly male: some studied for professional reasons, but many did not, and an atmosphere of genteel elitism prevailed on campus" (Cude, 1987, p. 37).

1916 – 1939

In the period up to 1939, "the importance of research, and with it the graduate degree, was increasingly recognized" (Spinks, Arlt & Hare, 1966). In 1916, the National Research Council (NRC) was established which, in 1917, began offering studentships of $600 - $750 per year to Master's students (Gingras, 1989). To qualify, however, students were required to show a propensity for research which was a problem for those studying at smaller universities without appropriate facilities. In response to this situation, in 1919, the NRC provided bursaries for undergraduates at the newer universities in support of introductory research (Gingras, 1989). Whether the bursaries were sufficient or how students used them is not elaborated. Still, in 1920, 218 Master's degrees were awarded in Canada and this number continued to grow by approximately 100 students every five years and thus reaching 587 in 1940 (Lussier, 1993). Notably, women represented just over 20% of these students (Lussier, 1993). In 1927, though enrollment had continued to rise, Canadian universities were criticized for lacking a national consensus on the significance and function of the Master's degree (R.F. Ruttan as cited in Harris, 1976, p. 427). Perhaps reflecting the mosaic-like Canadian society, a national agreement, beyond that of mutual coexistence, does not appear to have ever been reached (see for example, Aldrich, 1989; and regarding universities in general, Jones, 1997).

As a result of World War I and the Great Depression, this was "a traumatic period in the life of the country....[However], these twenty-five years also witnessed the beginning of a conscious adult education movement in Canada" (Selman, 1995, p. 65). The "Canadian wave of popular education in the 30's and 40's" (Haughey, 1998, p. 201)

became education for social change in the working classes (Haughey, 1998). Advancements in this area included the establishment of the Banff School of Fine Arts in 1933 by the University of Alberta's Extension Department and, in an effort akin to Internet education forums, the same department began a radio round table for citizens on current affairs (Haughey, 1998). Even greater enlargement of adult education programs was made possible when, "with the passage of the Technical Training Assistance Act, the Federal government provided funds for use by the Provinces in vocational training" (Selman, 1995, p. 66).

1940 – 1959

From 1940 – 1959, the number of women earning Master's degrees decreased over 5% (with a few fluctuations) due to increased female participation in the labour force during World War II followed by extended family responsibilities during the baby boom (Lussier, 1993). Notwithstanding, "the wartime period mobilized Canadians to unaccustomed tasks on an unprecedented scale. Whether in the armed forces, war industries or the vast network of civilian and voluntary support services, Canadian men and women responded, and learned as never before" (Selman, 1995, p. 67). It was during this decade that adult education efforts first began to merge with mainstream university activities. Of particular significance was the "hugely successful program of [federal] support for veterans entering or returning to university" (Cameron, 1997, p. 11).

> These students commenced with undergraduate studies, and moved on into the professional and graduate schools: they wanted to learn, they brought a tough, no-nonsense attitude to their studies, and they won for the older student a permanent place in campus life. (Cude, 1987, p. 37)

Surprisingly, even during the war years, the number of Master's degrees awarded increased though not substantially until 1950-51 when it reached 1,564 (Lussier, 1993). By the late 1940s, a variety of societal elements began to fuel the overall expansion of universities that occurred during the 1950s and 1960s. These factors included unprecedented economic expansion; the public belief that education was strongly linked to economic health; public awareness and support for the contributions that university research made during the war; and an insatiable labour market for graduates in all disciplines as well as projections of continued demand (Axelrod, 1982). Furthermore, the launch of Sputnik in 1957 by Russia, and the resulting emphasis on the need for technological advancement, underpinned growing support for the expansion of research and graduate programs (Axelrod, 1982; Jones, 1998). Accordingly,

> The brightest young men and some women were attracted to the scientific disciplines with their glamour, their relatively greater financial support, and their promise of rapid, professional advancement. The numbers of graduate students in the history, philosophy, literature, as well as in most of the social sciences, particularly anthropology, [however] dwindled. (Spinks, Arlt & Hare, 1966)

For women, greater access to university was gained after 1955, "but it was mostly in programs established especially for women...like Nursing" (Lussier, 1993, p. 3).

1960 – 1969

Due to the baby boom generation, graduate enrollment statistics "show a slow and small beginning [prior to the 1960s] with the mushroom clouds bursting, as it were, roughly in the period of the sixties and seventies" (Aldrich, 1989, p. 130). With "the realization that insufficient time and discussion was given to matters peculiar to post-

baccalaureate education" (Aldrich, 1989, p.3), the Canadian Association for Graduate Schools (CAGS) was formed in 1962 (Aldrich, 1989). Important CAGS issues at the time included microfilming Canadian Master's theses; foreign student issues such as the interpretation of academic records, assessment of language proficiency and admission standards; the need for adequate funds for students in the humanities and social sciences; the need to build up library resources; awarding Master's degrees without theses; contemplating the myriad of Canadian graduate school structures; and, always, the numbers of students enrolling and graduating (Aldrich, 1989). Increased enrollment in the social sciences and humanities began to emerge by the early 1960s (Spinks, Hare & Arlt, 1966). Nonetheless, even greater emphasis was recommended toward making graduate studies in these fields "interesting and attractive enough to assure the development of an adequate number of broadly educated, imaginative, creative men and women" (Spinks, Arlt & Hare, 1966, p. 10).

In 1960, Canada hosted the United Nations Educational, Scientific and Cultural Organization's (UNESCO) second world conference on adult education in Montreal. Internationally, the modern day conception of lifelong learning was beginning to emerge and the conference is credited with articulating,

> That adult education had passed the stage of being seen largely as a remedial activity, something one engaged in to make up for something that was missed earlier, and instead should be seen as part of a normal pattern of lifelong learning in which all persons would expect to take part as a customary dimension of adult life. (Selman, 1995, p. 68)

Though a trend toward inclusion and access to university had developed, the expansion of graduate studies programs was more tightly controlled (Axelrod, 1982). In a 1967

presentation to CAGS, the Chancellor of New York University recommended that, "at the graduate level a university can be excellent in a few areas without having every department and field available. It would, therefore, be better to aim to excel in six fields rather than achieve mediocrity in twelve" (Cartter, A. in Aldrich, 1989, p.83). In Ontario, it was also noted that,

> The average cost of educating a graduate student is considerably higher than that of an undergraduate (by a factor of 5 for a Ph.D. student) and that highly sophisticated research equipment and well-equipped libraries are necessary for the proper functioning of a graduate school. (Spinks, Hare & Arlt, 1966)

All factors considered, for reasons of prestige, status and to attract top-notch faculty, "most universities favoured the healthy development of their graduate programs" (Axelrod, 1982, p. 129). The opposing forces of idealism and fiscal reality led an Ontario commission to recommend,

> That all provincial universities should move towards full development of honours and Master's programs in central disciplines (though not necessarily in all of them!) and that Doctoral programmes ought to be restricted (at any one time) to a smaller list of institutions where adequate funds and facilities are available. (Spinks, Arlt & Hare, 1966, p. 23)

On a national level, CAGS records reflect that in fact, such action was widely implemented. Master's degrees were established and awarded much more extensively than were doctoral programs (see Aldrich, 1989), though, even in 1998 - 1999, Master's programs were only offered at 58 of Canada's 75 universities (Statistics Canada, 2001b).

During this period, university research received hefty federal endowments, with grants increasing from $1 million dollars at the end of World War II to $10 million in 1959 and finally reaching $42 million dollars in 1966 (Cameron, 1997). The provinces

contributed significant amounts to research as well, particularly Quebec, which refused federal research funding until 1959 (Cameron, 1997). Capital construction grants for the expansion of facilities in the social sciences and humanities were awarded via the Canada Council (Cameron, 1997). As well, in 1964, the *Canada Student Loan* system was introduced, though this was administered and augmented by the provinces (Cameron, 1997; Uhl & MacKinnon, 1992).

In 1966, Prime Minister Lester B. Pearson introduced the now infamous funding/responsibility concept that "the training and re-training of adults for participation in the labour force...[is] not 'education' in the constitutional sense" (Pearson, L. as cited in Cameron, 1997, p. 14). Thus, these activities became the federal government's focus and, eventually, funding to universities began to decrease. Research remained primarily a federal responsibility, however (Cameron, 1997), and under their new mandate, "the Federal government made enormous contributions to adult education in those years" (Selman, 1995). Though the impact on universities and graduate schools was not immediate, difficulties were about to emerge.

1970 – 1979

High inflation, increasing unemployment rates and questioning of universities' utility brought fiscal restraint beginning in the 1970s (Axelrod, 1982; Jones, 1998). Resulting from cutbacks, "most universities moved heavily into continuing professional education or de-emphasized their community education work" (Haughey, 1998, p. 204). Internationally, however, UNESCO adopted lifelong education as a main theme in 1970,

commissioning the well-known document, *Learning to Be* (Faure, 1972 as cited in Smith, 2001). Though rejected by governments dealing with recession at the time (Smith, 2001), the emergence of the Knowledge Economy has meant it is now regarded as "perhaps the best known report arguing for the movement" (Smith, 2001, p. 4; also see Collins, 1997).

On a separate note, in 1977, two new Canadian granting bodies were created for the purpose of extending funding to all academic disciplines (Cameron, 1997). The Social Sciences and Humanities Research Council (SSHRC) replaced most of the duties of the Canada Council (the Canada Council still oversaw the fine and performing arts), and the National Science and Engineering Research Council (NSERC) was established in lieu of the NRC (Cameron, 1997; Aldrich, 1989). CAGS continued to provide a forum for the granting councils to interface collectively with graduate school deans. However, based on Aldrich's (1990) book, these relationships were fairly antagonistic; joint planning never took place and there was little government transparency toward planning or funding issues.

For women, this decade was an improvement as participation rates rose to over 20% and continued to increase (Lussier, 1993). It is important to note that, "it was not until the early seventies that the proportion of women [in graduate studies] reached the same level that it was in the 1920s (Guppy, Balson, and Vellutini, 1987)" (Lussier, 1993, p. 2). The 1970s also produced innovation in graduate studies with the emergence of part-time and interdisciplinary programs (Aldrich, 1989). In addition, debate continued regarding non-thesis graduate degrees (Aldrich, 1989). The number of international graduate students enrolled was twice that of international undergraduates throughout this

decade - just under 20,000 including Master's and Doctoral students (Uhl & MacKinnon, 1992). Master's degrees awarded continued to grow from 9,638 in 1970 to 12,432 in 1980 (Lussier, 1993).

1980 – 1989

Although relations proved more productive with NSERC, CAGS criticized SSHRC in 1980 for insufficient support of graduate students, particularly at the Master's level, and for being disorganized, inefficient and unreachable (Aldrich, 1989). In recollection, Aldrich (1989) stated,

> Almost two and one half times as many scientists/engineers led this Association than did 'arts men'...[but] more motions, and decisions, in support, defense, or fostering of the arts and humanities emanated from CAGS than it ever dreamed of even discussing with respect to the sciences. The truth is that the needs were greater in the arts than in the sciences. (Aldrich, 1989, p. 67)

While CAGS looked forward to "a new co-operative period with SSHRC" (Aldrich, 1989, p. 109), it had not yet occurred by 1988.

In the mid-eighties, the Canadian Government introduced new changes for university research funding. In 1986, funding from granting councils began to require "matching contributions from the private sector" (Cameron, 1997, p. 21). In 1987, Canada's first university/government/private sector network for research was established -- The National Advisory Board on Science and Technology, based on an Ontario model (Cameron, 1997). According to Belanger and Lacroix (1992), these policies resulted from comparisons of Canada with other leading countries in the Organization for Economic Co-operation and Development (OECD). In a majority of the leading countries,

approximately 80% of research and development was privately funded or took place outside the university, while in Canada this figure was 45%. This situation was thought to make Canadian economics vulnerable, although the extent to which the new policies specifically affected Master's education is not clear. In the United States, for example, it was estimated in 1987 that "70% of all earned Master's degrees were non-thesis degrees" (LaPidus, J. as cited in Conrad, Haworth & Millar, 1993, p. 22).

Substantial entrenchment of a learning society had also begun in Canada in the 1980s. Selman (1995) reflected that,

> The professions had seen clearly the urgency of continuing professional education for their members and had mounted substantial programs. Major businesses had in some cases developed very large training enterprises within their organizations...[and] with the increased acceptance of adult or lifelong education as a normal expectation for increasing numbers of Canadians had come an increasing professionalization of the [adult education] field. Professional training programs, largely at the graduate level, were available in most Provinces. (p. 69-70)

Earned Master's degrees continued to rise in the 1980s, most dramatically between 1980 and 1985 as numbers increased from 12,432 to 15,208 (Lussier, 1993, p. 3).

> The enrollment increase [within all university levels] in these years was not at all anticipated and was caused by a combination of economic and social influences: a serious economic recession, the increased educational requirements of a highly technological world, an ever-growing recognition of the role of women in all aspects of society...and in part as a reflection of the desire of many people outside the traditional 18-24 age group to follow college or university courses. (Uhl & MacKinnon, 1992, p. 47-48)

The number of students enrolling in Master's degrees on a part-time basis also continued to increase in this decade and by 1989 more women than men were enrolled part-time (CAGS, 2000, Table 4). In addition, "full-time Master's degree enrollments of

international students in 1988 - 1989 numbered over 5,000, an increase of 17.1% over the previous year" (Uhl & MacKinnon, 1992, p. 55). Uhl and MacKinnon (1992) cite scholarship support and fee waivers as "greatly reducing the impact of international student fees, especially for certain targeted groups" (p. 54).

In the United States, Glazer (1986) observed that fundamental change in Master's programs and students had occurred over recent decades.

> The dominant paradigm is practitioner oriented, emphasizing training in skills, career development, and pragmatic goals. It is linked to the needs of the student and the demands of the marketplace and driven by externally imposed standards, and it emphasizes practice rather than theory, skills rather than research, training rather than scholarship....the Master's degree is overwhelmingly professional, it is largely terminal, and it is practice oriented. (Glazer, 1986, p. 83)

The new roles of the Master's degree overwhelmingly resembled the established purposes of adult education. Spencer (1986 as cited in Conrad et al., 1993) [also in the United States] discussed the contradiction between the Master's degree trends toward practical experience and coursework, and the traditional academic goal of knowledge creation. He pointed out that Master's students were often being "trained to become...consumers rather than producers, of scholarly research" (as cited in Conrad et al., 1993, p. 17). The extent to which this perception also prevailed in Canada is not clear, though recurring debate over non-thesis Master's degrees has been noted (Aldrich, 1989).

1990 – 2001

In the 1990s, enrollment in Master's education remained relatively stable, growing from 17,722 degrees awarded in 1991 to 21,678 in 1998 (CAGS, 2000, Table

25). Nevertheless, small decreases in Master's enrollment of 1.2% and 1.3% in 1994 and 1995, respectively, led to a drop in 1997 graduation rates, though this was followed again by inreases in 1998 (CAGS, 2000, Table 2). For the most part, this was due to changes in Master's education full-time to part-time ratios that began to fluctuate in the 1990s. Though the overall registration numbers grew in 1998, this was primarily due to increased full-time enrollment. Part-time Master's degree enrollment decreased 4.4% from 1997 - 1998, whereas full-time enrollment grew by 6% in the same period (CAGS, 2000, Table 2). Initially, only males decreased their part-time participation and the number of females enrolled part-time continued to rise. In spite of this, in 1998, the percentage of women enrolled part-time dropped more significantly than did the figure for men (CAGS, 2000, Table 2). At the same time, women students accounted for the largest growth in full-time enrollment (CAGS, 2000, Table 2).

The 1990 National Graduates' Survey (Little & Lapierre, 1996) showed that several non-traditional shifts were occurring in Master's Education. First, 65% of Master's graduates did not continue their education after graduation. For the 35% who did, however, doctoral studies were the most popular choice. Also, "at all levels of education (particularly among Master's and doctorate graduates), previous work experience reduced the probability of being unemployed" (Little & Lapierre, 1996, p. 31). Notable, too, was the fact that these students were forging new ground: only 13% of Master's graduates stated their father had achieved the same or higher level of education (Little & Lapierre, 1996). Also, though 49% of graduates were still under 29, there were

significant numbers of older learners. Specifically, 19% were ages 30 to 34, 14% were 35 to 40 and 18% were 40 years of age and over (Little & Lapierre, 1996).

In terms of discipline, the concentration of enrollments in the Natural and Applied Sciences noted prior to the sixties had reversed itself. In the period 1990 - 1998, 70% of Master's degrees were awarded in the Social Sciences and Humanities, while 18% were awarded in the Natural and Applied Sciences and 12% in the Life Sciences (calculated from CAGS, 2000, Table 24). The impact of this meant, "Canadian companies report that they cannot find highly skilled individuals in some fields, notably engineering and computer science" (NSERC, 2000, p. 9). Hence, "of the $3 billion of direct and indirect investment in Canadian university research in 1999, 38% was allocated to the Natural Sciences and Engineering" (NSERC, 2000, p. 46). A remaining 40%, though, went to Health Science research and 22% to the Social Sciences and Humanities (NSERC, 2000, p. 46).

Though research opportunities may abound, for non-thesis Master's students tuition may be a greater concern.

> For the fifth consecutive year, students in graduate programs will face higher average fee increases than their undergraduate counterparts. In 2001/02, they will pay an average of $4,360 in tuition, up 9.8% from 2000/01. Since 1997/98, fees for graduate programs have risen about 11.2% per year, compared with 6.3% a year for undergraduate programs. (Statistics Canada, 2001d, Section: Graduate fees rise more rapidly)

While relatively still uncommon, some sources also report "an increasing number of degree programs, such as the executive Master's of Business Administration degree, are entirely funded through student fees" (CICIC, n.d., Section: Tuition Fees). Concurrently,

"the trend in family income, in real terms...[has been] flat" (Bouchard & Zhao, 2000, p. 31).

For women, the percentage of Master's degrees earned in each major field of study group continues to vary considerably. In the period 1990 – 1998, 54% of degrees in the Social Sciences, 24% in the Natural and Applied Sciences, 61% in the Life Sciences and 56% in the Humanities were earned by women (CAGS, 2000, Table 24). Women continue to be underrepresented in most Master's disciplines that are non-traditional for them (See Appendix A for a breakdown of Canadian Master's degree enrollment by program and gender [extracted from CAGS, 2000, Table 16]). In 1997, NSERC announced five new research chair positions along with $2.6 million to promote women in science and engineering (NSERC, 1997).

Current Research and Perspectives: Lifelong Learning & Master's Education in Canada

The Rationale for Lifelong Learning

The cultivation of individual thought, citizenship and community development remain important outcomes of education for individuals of all ages and their societies (World Bank, 1999; CMEC, 1997). Increasingly, however, lifelong learning is cited as integral to national economies and future economic expansion (Beck, 1998; CMEC, Statistics Canada & HRDC, 1999; CMEC, 1997). Canada, specifically, has a smaller percentage of the population who are younger adults than do countries such as Mexico, Brazil and Malaysia (Murray & Zeesman, 2001). To support changes in Canadian labour

force requirements, there is, therefore, a need to rely more heavily on recurrent learning by older individuals (Murray & Zeesman, 2001).

> In Canada, as in other industrialized countries, the combined effects on the one hand of globalizing markets and restructuring of labour markets and the economy, and on the other hand of the scientific and technological revolution, have deeply affected education policies and perspectives since the 1980s. The focus in adult education has gradually shifted from educational concerns to the economy and employment. (CMEC, 1997, Section: 1.1, ¶ 1)

Some countries have embraced the idea of education as a key variable affecting economic growth and competitiveness. For example,

> By 1997 Ireland had abolished all tuition fees at universities and colleges, and the country's farsighted government is working rapidly to abolish tuition fees for part-time students as well. The country has embraced the concept of life-long learning and accordingly has been rewarded with an economy that has grown by 62% in the last five years! (Beck, 1998, p. 17)

Additional support for lifelong learning as an economic support and generator stems from studies such as the NGS' which have shown educational attainment correlates to higher income, lower unemployment rates, lower under-employment and longer-term employment (Little & Lapierre, 1996; Taillon & Paju, 1999; Bouchard & Zhao, 2000; Baseline Market Research, 1998). In addition, since 1985 "the process of upgrading ...technologies has accelerated...[which, has also] led to a greater focus on lifelong learning" (CMEC, 1997, Section 1.1). Correspondingly, for Master's programs as well as all post-secondary education, technology has provided more options through which adults can access courses (CMEC, 1997).

Defining Lifelong Learning

> Within one philosophy, lifelong learning is described as an idealistic state.
>
> The future of our society depends on informed and educated citizens who, while fulfilling their own goals of personal and professional development, contribute to the social, economic, and cultural development of their community and of the country as a whole. (CMEC, 1998, Section: Introduction)

Other literature emphasizes the importance of both formal and informal learning.

> While Canadians have always been lifelong learners, until recently, formal education and training institutions and practices have marginalized non-formal and informal learning. In the context of rapid societal change, however, emerging policies and strategies have placed an increasing emphasis on continuous learning for the individual and collective good of Canadians. There is increasing recognition that learning takes place in all environments – the workplace, the community, the home and family, leisure activities and travel. (Barker, 1998, Section: Executive Summary, ¶ 1)

Barker (1998) found, "typically, Canadian definitions and policies try to incorporate all the definitions" (Section 1.1). The following points have been compiled to reflect the most common elements.

- The recognition that learning happens in more than the formal education system...
- The emerging understanding that learning is a continuous need over a person's lifetime;
- The knowledge that more than formal learning is needed to cope with change in contemporary society;
- The awareness that a fully lifelong learning organization or society is a preferred future state;
- The recognition that both individuals and their communities, local and global, need to be involved in determining lifelong learning needs;
- The notion that lifelong learning is both a product of and driver for the widespread use of information technologies;
- The concept that both individuals and whole societies benefit from lifelong learning. (Barker, 1998, Section: 1.1)

Hatton (1997) suggests part of the definitional difficulty with lifelong learning has resulted from complications in distinguishing between education (the means) and learning (the product). "The production of the product is ongoing, and for this reason learning is often confused with process" (Hatton, 1997, p. 7).

Government Support for Lifelong Learning

Canadian governments have widely articulated the need for lifelong learning in the modern labour market. For instance, the Council of Ministers of Education Canada (1997), representing provincial governments, has stated:

> A continuous education system based on the needs of learners has become an inescapable necessity. It is pushed by social, economic, and cultural change, linked particularly to the accelerating renewal of knowledge and technologies, by the restructuring of economies and the job market, by the multiple facets of daily life, and by the search for alternatives in the lives of adults and of communities. Yet Canada's education systems are still too focussed on early training and the institutional system to respond adequately to these new challenges, and should be reorganized to integrate into their dynamics a perspective of lifelong learning. (Section: Conclusion)

At the federal level as well, the Prime Minister of Canada has proclaimed that,

> In the context of rapidly changing technology, when Canadians may be required to update their skills many times in their working lives, governments must act to help all Canadians acquire the means to take part in life-long learning. Since taking office...we have developed programs that:
>
> - Ensure access to affordable post-secondary education;
> - Increase funding for research and development; and
> - Encourage all Canadians to keep abreast of new developments in the workplace and to participate in lifelong learning. (Chretien, 2001, Section: Skills and Learning)

Canadian governments also provide financial support, to some extent, for returns to formal education without age parameters. For instance, there are no age restrictions on federal part-time or full-time student loans or grants; however, these are awarded according to need. Older individuals who are working at the time of application may, therefore, not qualify. Students of all ages can claim personal tax deductions though, and these amounts have just recently been raised "to $400 a month for full-time students and $120 a month for part-time students" (Chretien, 2001, Section: A record of achievement). Still, these programs have been criticized in the past for lacking visibility and practicality.

> In a recent survey of part-time students at four universities, only 10% of part-time students at these four universities had applied for a Canada Student Loan and only 6.7% had received a government loan for part-time study (Potter, 1998). When asked why more students didn't apply for the program many responded that they didn't know of the existence of the program or that the program was too restrictive and did not assist them with their financial support. Many criticized the lack of interest-subsidy for the loan during the period of part-time study and suggested that the loan should be on the same basis as the full-time student loan with interest starting at the conclusion of study. (Sharpe, 1998, Section: Canada Student Loan for Part-time Students)

Other initiatives such as government contributions to Registered Educational Savings Plans are "only available to those under 18 years of age...[and] this does not encourage those adults who want to return for their own education" (Canadian Association of University Continuing Educators, 1998, online). However, *The Life-long Learning Plan* allows Registered Retirement Savings Plan (RRSP) money to be withdrawn up to $10,000 per year without tax penalty, to a maximum of $20,000 if repaid within 10 years (Revenue Canada, 2001).

Universities, Graduate Programs and Lifelong Learning

Holdaway (1996) found "Canadian graduate deans commonly observed that the quality of postgraduate supervision is highly variable, both within and between departments" (p. 67). Further, "the extent to which postgraduate students are integrated into academic departments is highly variable...[and] the way that postgraduate students are viewed and treated also depends on their age, work experience and attendance patterns" (p. 70). Other research has shown these aspects can have consequential effects. Weil (1997) found in the United Kingdom that university structure, flexibility and culture went far to attract or deter adult participation in graduate programs.

> There are many potential candidates for postgraduate and post-experience education. They constitute a diverse and sizeable group of adult learners and former graduates. All of who can benefit from new forms of relationship with academic institutions and many have the desire to do so. However, as they dance close to the borders, they can confront sterile dualities, such as between theory and practice, objectivity and subjectivity, discipline purity and problem centredness, universalized and contextualized truths. For such candidates, the psychological and social costs of re-engaging with the assumptions, practices and traditions of the formal system - merely for the sake of a qualification - may be too great to warrant investing time, energy and spirit. (p. 135)

Regarding degrees with theses and/or research components, "graduate deans in Canada commented that percentages completing are lower than they would like, but that this aspect varies among departments" (Holdaway, 1996, p. 71). Time to degree completion was cited as a concern since data can become obsolete and other projects delayed (Yeates, 1991a as cited in Holdaway, 1996). Reasons suggested for non-completions and delays included lack of financial support, procrastination, insufficient faculty support and jobs (Holdaway, 1996).

There is evidence, nonetheless, that at least some Master's degrees cater to students of varying age and experience. Programs now include degrees geared to experienced executives (e.g., Queen's School of Business, 2001) and offer the opportunity to propose personalized, interdisciplinary programs (University of Victoria, 2001). Part-time Master's study options have existed for years (Aldrich, 1989) and an increasing number of programs are delivered via the Internet (e.g., Memorial University of Newfoundland Faculty of Education, 2001). At MacMaster as well as other universities, "the School of Business is prepared to admit to the MBA program a small number of highly qualified students who do not hold a bachelor's degree" (MacMaster, 2001). These programs may reflect Podegorecki's (1997) finding that professors felt graduate degrees were a pragmatic pursuit for the vast majority of Canadian students, thus mirroring previous American observations (Glaser 1986; Spencer 1986, as cited in Conrad, Haworth & Millar, 1993). As a result, Canadian graduate schools were criticized for "failing to motivate even the best students...to challenge and reshape the sciences of social sciences in a revolutionary way" (Podgorecki, 1997, p. 74).

Questioning the Need for Lifelong Learning

Recent declines in Master's part-time enrollment rates (CAGS, 2000) as well as other university programs (Drewes & O'Heron, 1999; Sharpe, 1998) have raised questions about the need for lifelong learning as well as the ability of universities to deliver relevant services. "The declining participation of part-time students is inconsistent with the perceived need for more lifelong learning among adults, particularly in the face

of new technological and workplace changes" (Drewes & O'Heron, 1999, p. 1). In one explanation for the over-all decreases, it is suggested that rising tuition fees have affected part-time student participation rates, which are more representative of older learners, to a greater extent than full-time.

> Most part-time students would not consider lost earnings opportunities as part of the cost of their studies. Therefore tuition represents the single largest component of their educational costs. Thus, the same proportional increase in tuition levels will increase the relative costs to part-time students by a greater proportion than for full-time students. (Drewes & O'Heron, 1999, p. 1)

Or, based on human capital theory, many adults may now feel they have adequately completed their education by earning degrees and other post-secondary diplomas, and, as a result, part-time enrollment has dropped.

> Increases in part-time enrollments caused by unexpected economic shifts that increase the premium to university education will only be temporary. Once the new, higher premium is known, it will be factored into the human capital decisions of young individuals and unless there are further, unexpected changes in the premium, through time all age cohorts will have adjusted to the correct level of human capital. Thus, part-time enrollments will be sustained only if there is continued growth in unexpected demand for university-educated labour. (p. 1)

For individuals who can gauge the premium level of education for their cohort, Drewes and O'Heron (1999) point out the benefits of the front-end, formal, education model.

> The economic benefits to education take the form of a higher stream of earnings throughout the working life and evidence is unequivocal that such earnings gains are large for university degree holders. Since there is only a limited time during which those benefits can be collected, the earlier the investment takes place, the larger the rate of return. From a theoretical point of view and in a world where individuals have perfect foresight, we should therefore see people undertaking educational investments as early as possible in their lives. (p. 10)

Sharpe (1998) suggests declining part-time participation could also be due to lower unemployment in the early 1990's, decreased job security, declining family income, and

the reduced capacity of universities to offer evening, extension and part-time programs. Circumstances such as these may have made it difficult for Canadians to participate in part-time education (Sharpe, 1998). Supporting this view, a recent survey found 40% of Canadians who wanted to participate in adult education and training but did not, cited inappropriate time or location of program offerings, cost and/or a lack of financial resources as major barriers (Statistics Canada, 2001c). Nonetheless, "part-time enrollment is still growing on almost one-quarter of Canadian campuses...[and for] institutions that specialize in distance education...part-time study is almost universal" (O'Heron, 1997, p. 7).

Canadian Master's Graduates as Lifelong Learners

Following secondary school, a high number of Canadians continue voluntarily with formal education. "By 1998, 61% of women aged 25 to 29 and 55% of men the same age were post-secondary graduates" (CMEC, Statistics Canada & HRDC, 1999, Section 2.3). Attainment of these qualifications can take place as an aspect of initial or post-experience formal, post-secondary education, and both types of patterns represent significant numbers of individuals.

> The participation rate of the 17 to 24 age group is significantly higher than that of the 25 to 54 age group. However, because the second group contains more people, the number of students in the 25 to 54 age group is much higher. In 1997, at both levels of education combined [college and university], there were 1.4 million students aged 25 to 54 enrolled in formal education, compared with 576, 000 students in the 17 to 24 age group. (CMEC, Statistics Canada & HRDC, 1999, Section F)

The following paragraphs outline the most recent research related to the characteristics and experiences of Master's graduates alongside the most recent studies and information on the lifelong learning pursuits of adults. Data are organized by the variables to be investigated further in this study.

Age.

Data show that propensity for formal learning varies with age. In fact, "after educational attainment, age is generally the best predictor of participation in adult education" (Belanger & Valdiviselo, 1997 as cited in Rubenson, 2001, p. 19). In 1997, adults who were 25 to 34 participated in adult education and training activities at a rate of 39%; those aged 35 to 44 at a rate of 34%; 45 to 54 at 30%; 55 to 64 at 15%; while adults 65 years and over only participated at a rate of 5% (Statistics Canada, 1999). Murray and Zeesman (2001) concluded that even within a framework of lifelong learning, the major investment in education will continue to take place in the early stages of life. Still, "results suggest that the education of older people is less developed than the changing demographic structure appears to call for" (Rubenson, 2001, p. 20). "The incidence of adult education and training [in Canada] is average by international standards" (Murray & Zeesman, 2001, p. 5).

Data show most Master's graduates (53%) were 25 to 34 and, further, little fluctuation in graduation age has been evident in recent years. The median graduation age remained the same (30 years of age) for both 1990 (Little & Lapierre, 1996) and 1995 Master's graduates (Taillon & Paju, 1999). Variation in graduation age by field of study, however, can be significant. A study of graduates from the Atlantic Provinces showed an

over-all median age of 36 years for Master's graduates, but this ranged from a median of 41 years of age among Fine and Applied Arts graduates to 25 years of age among Agriculture and Biological Science graduates.

Gender.

In 1995, 53% of Master's graduates were female compared to a 48% representation among 1990 graduates. For the Atlantic Provinces, this figure was even higher as 59% of all 1996 Master's graduates were female. Little and Lapierre (1996) found that women outnumbered men in the 40 and over age group of 1990 Master's graduates specifically. By field of study, Finnie's (1999; see also Little & Lapierre, 1996, p. 10) findings reflected Lussier (1993) in that women who were enrolled in Master's programs for the graduation years 1984, 1986 and 1990

> Tended to be over-represented in teaching/education, fine arts/humanities, the 'other' social sciences, and other health disciplines (i.e., apart from doctors, dentists, pharmacists, and the like - dominated by Nursing graduates)...and under-represented in commerce, economics, engineering, computer science, and math and the other pure sciences. (p. 22-23)

General studies of adult education and training patterns have also shown

> Women (29%) participated somewhat more than men (27%)...[and] this was especially the case for self-training (with no support from the employer): participation rates for women were 14% and for men, 9%. However, in employer-supported training activities, participation rates were almost the same for women (21%) and men (20%). (CMEC, 1997, Section: 1.2, ¶ 3)

The lower incidence of employer supported training for women may be a result of a lower participation rate for part-time employees, since "this is more often a reality for women, who more often work part-time than men" (Rubenson, 2001, p. 22).

Region.

> Provincial rates of participation in adult education programs varied widely in 1997, from a low of 19% in Newfoundland to a high of 32% in British Columbia. Rates in Quebec and the Atlantic provinces, except Nova Scotia, were lower than the national average of 28%. (Statistics Canada, 2001c, Section: Substantial differences in rates of participation among provinces)

However, participation rate differences by province have been reduced over the 1990s (Tuijinman et al., 2001). Further, "the fact that individuals with higher educational attainments participate more stands up to scrutiny in all regions of Canada" (Rubenson, 2001, p. 18). The differences in adult education and training participation rates by province that do exist may be due to variation in the industrial and occupational mix of the region, as well as the distribution of large firms which have been shown to sponsor more education and training (Rubenson, 2001).

By field of study, the highest numbers of 1998 Master's graduates in all provinces were in the Social Sciences and Related fields (Statistics Canada, 2001b, p. 150 – 151). The number of graduates in Education followed this most closely, in every province except Ontario, which had the second highest number of graduates in the Humanities and related fields (Statistics Canada, 2001b, p. 150 – 151). These likenesses, too, may be due to similar labour markets for graduates of these disciplines across the provinces.

Reasons for Enrolling.

The majority of Canadian adults say they mainly invest in education and training as a means to remain competitive on the labour market, though "10% participated for personal interest or leisure" (Statistics Canada, 1999, Section: Participation in adult education and training by level of educational attainment). Still, "over 50% of courses and programs taken for personal purposes were also found useful at work, [and] similarly, though to a lesser extent, job-related courses helped people in their personal lives" (Rubenson, 2001, p. 18).

The influence of higher education levels on participation in adult education and training is visible, with Canadian university graduates showing the highest participation rates (Tuijnman et al., 2001). Nonetheless, the participation rate of the well educated reduced slightly in the 1990's (Tuijnman et. al, 2001). Other findings have shown that of the Bachelor's graduates who pursued further education, which most often was a Master's or Doctoral degree (Butlin, 2001), there were higher rates of doing so for individuals who graduated in a recession year (Finnie, 1999). Finnie (1999) surmises that these graduates, "make initial forays into the labour market and subsequently return to school if they find their employment opportunities to be limited" (p. 25).

Bachelor's graduates from fields of study that were job-specific, such as engineering and applied science, and health professional programs, did not pursue further post-secondary education to the extent of social science graduates (Butlin, 2001). In addition, when graduates from job-specific fields of study did pursue further post-secondary education, they more often took programs other than Master's or Doctoral degrees, with the exception of engineering and science graduates (Butlin, 2001). Also noted was that Bachelor's graduates who studied part-time or had more than two years

work experience had lower odds of participating in Master's and Doctoral programs (Butlin, 2001). Bachelor's graduates whose parents had a university degree, who were male or had $15,000 or more in student loans, had higher odds of participating in Master's and Doctoral programs (Butlin, 2001). The occupation and income levels of individuals have also been found to affect participation rates in adult education and training. "Managers and professionals participate more (52%) than do office staff, sales staff, or service employees (32%), or blue-collar workers (24%)" (Council of Ministers of Education, Canada, 1997, Section: 1.2). In terms of income, the incidence of employer-sponsored training among full-time workers increased for employees with higher income levels (CMEC, 1997, Table 5).

On a scale of one (not important) to five (very important), Atlantic Master's graduates' most important expectation at the time of enrollment was to gain in-depth knowledge in a field of study (4.46). This was followed by self-improvement (4.39), the chance of a good income (3.92), and to learn skills for a particular job (3.88) [Baseline Market Research, 1998]. The importance of each expectation did vary by field of study, however, and data were slightly different, nationally. In order of importance, 1990 Master's graduates, nationally, ranked self improvement first, followed by gaining an in-depth knowledge in a field of study, gaining skills for a particular job, and then the chance of a good income (Little & Lapierre, 1996).

Specific adult groups have been shown to have much lower tendencies than average toward university participation. For example, "the percentage of the Aboriginal population with a university degree, while more than doubling between 1986 and 1996,

was nevertheless still small at about 4% versus 19% of non-Aboriginal people" (CMEC, Statistics Canada & HRDC, 1999, p. 97). Also at risk are adults in lower socio-economic groups.

> More regular monitoring of educational attainment by SES [socio-economic status] is needed, especially for university participation, in light of the substantial cost increases in post-secondary education in recent years. Such monitoring would allow policy makers to track and fine-tune programs aimed at ensuring that students who are academically capable of attending and benefiting from university are not prevented from participating because of low income. (CMEC, Statistics Canada & HRDC, 1999, p. 106)

Given the aforementioned relationship between educational level and continuing participation, Aboriginal people are not as likely to develop lifelong learning patterns or the potential benefits of on-going formal learning under the current societal conditions. The extremely few Aboriginal people, in particular, who earn undergraduate degrees, translate into almost none pursuing Master's programs.

All in all, the enrollment of adults in formal education increased slightly between 1991 and 1997 (CMEC, Statistics Canada & HRDC, 1999). However, Livingstone, Fung, Erlich and Adams (1997) found that

> In spite of the great increases in educational participation, about 70% of Canadians say that their most important job-related knowledge comes from other workers or learning on their own, rather than employment-related courses. Only about 4% of respondents say they are under-qualified to do their jobs, 2/3 say they are adequately qualified, while 20% say they are overqualified to perform their current jobs.
>
> These indicators, and many others documented in The Education- Jobs Gap, suggest that most of those in the labour force are actively engaged in employment-related lifelong learning, that we are now living in a permanent learning culture, a knowledge society. The most general social problem is not a lack of education and training, but a lack of decent jobs in which more people could actually apply the knowledge and skills they already have and, as this

> benchmark survey suggests, are continually increasing. (Section: Barriers and Linkages to Education, Informal Learning and Employment, ¶ 2-3)

Concurring, other studies have found that 87% of those who did not participate in adult education said they did not perceive that they required any further training (Statistics Canada, 2001). For the remaining 13%, major barriers to participation in education and training activities included being too busy at work, finding course times/locations inconvenient or too expensive, and family responsibilities (Statistics Canada, 2001).

Field of Study.

Table 2 presents a breakdown of 1995 Canadian Master's graduates by field of study. The highest numbers of Master's graduates were in the Commerce, Education and Social Science fields. Propensity to participate in Master's programs by adults who were working prior to enrollment may be related to field of study in that participation rates in adult education and training have been linked to these fields of study (CMEC, 1997). "In 1993, 22% of [adult education and training]...was in administration and commerce. This was followed closely by 19% in engineering and technology. The bio-medical field, including biology and health, accounted for 16 %" (CMEC, 1997, Section 2.4).

Study Mode.

For adults participating in formal education and training beyond initial post-secondary studies, 81% were studying part-time, while only 19% studied full-time (CMEC, 1997, Section: 1.2). Divergently, just 39% of Master's graduates from the

Table 2

The Distribution of 1995 Canadian Master's Graduates by Field of Study

Field of Study	% of Graduates (n = 6,638)
Commerce, Business, Management	21
Educational, Recreational & Counseling Services	19
Social Sciences & Related Fields	18
Humanities & Related Fields	12
Health Professions	12
Engineering & Applied Sciences	9
Mathematics, Physics & Pure Sciences	6
Agricultural & Biological Sciences	4
Fine & Applied Arts	2

Source: Taillon & Paju (1999).

Atlantic Provinces had studied part-time although an additional 9% had studied part-time for at least part of their degree (Baseline Market Research, 1998). These figures differed significantly by field of study in that less than one percent of graduates in the Fine and Applied Arts; Agricultural and Biological Sciences; Engineering and Applied Sciences or Mathematics; Physics and Pure Sciences, had studied part-time (Baseline Market Research, 1998). Notably, these are the same disciplines which had the fewest graduates and, with the exception of the Fine and Applied Arts, the lowest representation of women

and the youngest graduates (Baseline Market Research, 1998; see also Table 1 and Appendix A).

Educational Funding Sources.

In the Atlantic Provinces,

> Graduates used the following means to help cover the cost of a university education:
>
> - 90% worked to finance part of the cost of university;
> - 50% borrowed money through a government student loan program;
> - 44% received a scholarship or bursary;
> - 13% received funding through an employer or a government program;
> - 14% borrowed money form a lending institution or other private sources; and
> - 9% participated in a co-op program. (Baseline Market Research, 1998, p. 37)

Nationally, "21% of participants in adult education and training activities received direct financial support from the employer, but only 17% of all participants in a program of study at any level reported financial support from government" (Rubenson, 2001, p. 28). These figures indicate that financing differences exist between individuals engaged in the initial education cycle and those pursuing education that is post experience. Government funding is directed at the unemployed and those not in the labour force (Rubenson, 2001, p. 28). Older, part-time students are more likely to also be employees and, therefore, may receive financial support from their employer.

Accumulated Debt.

Finnie and Garneau (1996) scrutinized "the borrowing and repayment patterns of Canadian post-secondary students from the early 1980s into the beginning of the 1990s" (p. 11). This study focused on borrowing from federal and provincial student loan programs only, but showed borrowing generally grew over the period. In 1990, 32% of Master's graduates borrowed an average of $8,540, while in 1982, 31.5% borrowed an average of $5,865 (calculated from Finnie & Garneau, 1996, Table 1a). Other findings showed "those who obtained a Master's degree by 1988 had a much lower incidence of borrowing at the Bachelor's level (although mean amounts were higher for the few who did borrow)" (Finnie & Garneau, 1996, p. 16). Similar patterns were also found for those who graduated in 1991, but not to such an extent (Finnie & Garneau, 1996).

In terms of debt to earnings ratios, which are "defined as the amount owed to student loan programs as of graduation divided by the annual earnings in the job held at the first interview" (Finnie & Garneau, 1996, p. 17), debt burdens declined significantly as degree level rose (Finnie & Garneau, 1996). That said, these figures were higher for women at all levels except the Ph.D. (Finnie & Garneau, 1996). By considering field of study in the calculations, however, Finnie and Garneau (1996) showed debt burdens became more equal for men and women. The higher debt burdens of women related significantly to the fields of study that they dominate, many of which had lower average earnings (Finnie & Garneau, 1996).

Payback rates were higher for Master's graduates than Bachelor's, but 20% of men and 23% of women indicated they did have difficulty repaying student loans (Finnie

& Garneau, 1996). The most common reason cited for this difficulty was insufficient earnings (Finnie & Garneau, 1996). In contrast, nearly 70% of Master's graduates from the Atlantic Provinces did not borrow to finance their degree from any source (Baseline Market Research, 1998).

Job-Education Match.

Frenette (2000) confirmed that 1990 Master's graduates experienced less over-qualification than 1982 graduates, but, in general, rates of over-qualification were still high for this level, ranging from 48% to 72%. When field of study was considered, "Education graduates tended to have high incidences of over-qualification, while the opposite was true for Other Health graduates" (Frenette, 2000, p. 8). Nonetheless,

> It is now clear that many of these Master's graduates hold jobs that require a Bachelor's degree...[and] the level of education required does not seem to have a significant influence on earnings. These graduates have more options available to them, and can obtain jobs that require lower levels of education without suffering a large decrease in earnings. (Frenette, 2000, p. 10)

As stated in the introduction, however, Master's graduates who hold jobs requiring Bachelor's degrees still often utilize skills learned through their Master's program (Frenette, 2000; Butlin 2001). Specifically,

> In 1995, 47% of Master's graduates said that in their current job they used skills acquired in their Master's programs to a great extent, while 40% said that they used their skills to some extent. In comparison, only 31% of Bachelor's graduates said that they used the skills acquired in their Bachelor's programs to a great extent in their current job, while 46% said that they used their skills to some extent. (p. 23)

Still, only 62% of 1995 Canadian Master's graduates in 1997 felt their "work was closely related to their education and training" (Taillon & Paju, 1999, p. 14). By comparison, 51% of Bachelor's graduates and 75% of Doctoral graduates felt there was a close match between their work and education. Master's graduates of the Pure and Applied Sciences, however, had closer job-education skill matches than those in the same disciplines at the Bachelor's level (Finnie & Lavoie, 1997).

Job Characteristics.

1995 Master's graduates, nationally, had the lowest average unemployment rate of all post-secondary graduates in 1997 at 5.9% (Taillon & Paju, 1999). Unemployment rates of Master's graduates by field of study ranged from a low of 3% in the Education related disciplines to 12% in the Mathematics and Physical Sciences (Statistics Canada, 2000, p. 163). The higher unemployment rates in the Mathematics and Physical Science disciplines are puzzling since shortages in these areas have been reported (NSERC, 2000).

Seventy-two percent of 1995 graduates indicated they held a full-time position two years following graduation in 1997 (Taillon & Paju, 1999). A constant five to seven percent of graduates of 1982, 1986 and 1990 were self-employed two years after graduation (Finnie, 1999, p. 45). Finnie's (1999) results "suggested [though] that self-employment has more often stemmed from the advantages of the self-employment option rather than the lack of suitable opportunities with respect to wage and salary positions" (p. 45).

Butlin & Oderkirk (1997) showed "education was one of the strongest predictors of an individual's ability to access occupations offering autonomy and authority in the workplace" (p. 33). Of all educational levels including the Ph.D., Master's graduates were most likely to influence key workplace decisions and coordinate their own work tasks (Butlin & Oderkirk, 1997). Bachelor graduates, however, were slightly more likely than Master's graduates to classify their jobs as managerial or as top management (Butline & Oderkirk, 1997).

Income.

The average 1997 income of both Master's and Doctoral 1995 graduates was, $47,000, while Bachelor's graduates' was, $32,000 (Taillon & Paju, 1999). Additionally, Finnie's (2000) comparative study of labour market outcomes of the 1984, 1988 and 1992 graduation years showed that for university graduates:

> The average earnings of male graduates of the more recent cohorts either held steady or showed small to moderate declines relative to earlier groups, while women's earnings have either remained stable or risen; these combined effects have resulted in steady decreases in the various earnings gaps between the sexes (by level of education and year) over the last decade or so. (Finnie, 2000, p. 32)

Earnings patterns for both genders of Master's graduates from 1982, 1986 and 1990 were consistently higher and flatter than the post-graduation earnings profiles of Bachelor's and College graduates (Finnie, 1999). Bachelor's graduates showed a higher percentage of growth in their earnings in the five years after graduation, but mean earnings were still lower than for the Master's level (Finnie, 1999). Interestingly, "the gap in both hourly wages and annual earnings between younger and older workers has

increased over the past twenty years for both men and women" (Kapsalis, Morissette & Picot, 1999, p. 1). This has largely been due to the fact that "older men and women improved their position relative to younger counterparts between 1981 and 1995" (Kapsalis, Morissette & Picot, 1999, p. 3). Research indicates that "increases in the wage gap can be attributed to the largest extent to the increased educational attainment of older workers" (Kapsalis, 1998, p. 12 - 13).

For 1995 university graduates (all levels combined), the fields of study with the highest earnings, from highest to lowest were: Health; Engineering and Applied Sciences; Mathematics and Physical Sciences; Education; Commerce, Management and Administration; General Arts and Science; Agriculture and Biology; Humanities; and the Fine and Applied Arts (Taillon & Paju, 1999). Finnie & Lavoie (1997) found that by level of study, engineering graduates and computer sciences fared best at the Bachelor's level (although the health field was not included because both high and low earners are within the discipline group). At the Master's level, Social Sciences and Humanities graduates vastly improved though their earnings over Bachelor's graduates of the same disciplines (Finnie & Lavoie, 1997).

Plans to Pursue a Ph.D.

> Slightly fewer graduates from the class of '95 continued their studies within two years after graduating than did graduates from the classes '86 and '90. However, these percentages were still quite high...[For Master's], 65% of men and 56% of women pursued additional qualifications at the post-secondary level. (Taillon & Paju, 1999, p. 6)

Of the 1995 Master's graduates who pursued additional post-secondary studies, 31% pursued a Doctoral degree (Taillon & Paju, 1999). "Master's and Doctoral graduates' main motivations [to continue their studies] were to earn a higher salary and to get a better or another job" (Taillon & Paju, 1999, p. 6). In the Atlantic Provinces, 28% of 1996 graduates were pursuing Ph.D.s one year after graduation (Baseline Market Research, 1998).

Summary

The University of Toronto awarded the first Master's degree in the region that would become Canada in 1845. By 1915, the requirements for the Master's degree at most universities included an Honours B.A., coursework and a thesis (Harris, 1976). By the 1970s, Master's degrees could be interdisciplinary, non-thesis and/or pursued part-time. Since then, enrollments have continued to grow. Over 21,000 Master's degrees were granted in Canada in 1998 (CAGS, 2000).

Master's graduates on average enjoy low unemployment rates, high earnings and are the most likely to supervise the work of others. Women now earn over 50% of Canadian Master's degrees; however, they are still underrepresented in many disciplines (Lussier, 1993; CMEC et al., 1999). Many adults pursue Master's degrees at older ages. In 1995, 52% of graduates were 30 and over (Taillon & Paju, 1999). Socio-economic change has resulted in these lifelong learning trends.

Chapter III: Methodology

Introduction

This study was designed to describe, compare, and map the experiences of multi-aged individuals who attained Master's degrees in 1995 using data from the *Survey of 1995 Graduates in 1997* (University of Western Ontario, 2001). The decision to utilize this data derives from the quality and breadth of this sample as well as the wealth of variables for investigation that had not been previously utilized for this purpose. Collection of data this extensive, in terms of its national range and sample size, as well as the specialized collection and manipulation methods employed, could not have been undertaken within the scope of this project. Details of Statistics Canada data collection as well as the research procedures and statistical manipulations undertaken for the purposes of this study are, therefore, included in this section.

Population: Survey of 1995 Graduates

The *Survey of 1995 Graduates'* base population included "the set of graduates from Canadian post-secondary education institutions who completed the requirements for degrees, diplomas, or certificates during the 1995 calendar year" (SSD, n.d., p. 11). Excluded were graduates from private post-secondary education institutions as well as Canadian graduates from universities outside the country. In terms of Master's graduates, the total number reported to Statistics Canada from the included universities was 22,850 (SSD, n.d.). From these individuals, a sample of 9,407 individuals was randomly selected

and contact attempted. Of the 81.8% response rate achieved, 70.6% were in the domain of interest. This included graduates "who were still living in Canada in May-June-July 1997, and provided complete or partial information" (SSD, n.d., p. 31). The domain of interest excluded those "who turned out not to have graduated at all in 1995...were no longer living in Canada or were dead; or indicated upon subsequent contact that they graduated with more than one degree, diploma or certificate in 1995" (SSD, n.d., p. 31). *Table 3* presents the "reported sub-population sizes, selected and responding sample sizes, response rates, and graduates in the domain of interest by province...of institution" (Special Surveys Division, p. 32) for Statistics Canada's *Survey of 1995 Graduates in 1997*.

Method of Data Collection: Survey of 1995 Graduates

"The Survey of 1995 Graduates was conducted from May to July 1997, using a computer-assisted telephone interview (CATI) methodology" (SSD, n.d., p. 11). A complete description of the design methodology used to collect and process the survey data is available on-line from Statistics Canada's Special Surveys Division (SSD, n.d., Sections 6 & 7). Included at this reference site is information on survey-staff training procedures, hours and dates of telephoning, tracing methods and sources, data capture, and edit and imputation methodology. Procedures used to code open-ended questions, field of study descriptions, creation of derived variables, weighting, and the suppression of confidential information are also included (SSD, n.d., Sections 6 & 7).

Table 3

1995 Master's Graduates' Sub-Populations, Sample Sizes and Response Rates by Province of Institution for the National Graduates' Survey

Province	Reported Subpopulation Size	Selected Sample Size	Responding Sample	Response Rate 1997	Domain of Interest 1997	Domain of Interest by %
NF	305	281	239	85.1	222	79
PEI	3	3	3	100	2	66.7
NS	1013	792	621	78.4	513	64.8
NB	405	364	320	87.9	260	71.4
QC	7689	1645	1352	82.2	1173	71.3
ON	8473	2132	1749	82	1508	70.7
MAN	586	523	409	78.2	380	72.7
SK	591	497	429	86.3	388	78.1
AB	1669	1144	858	75	808	70.6
BC	2116	2026	1651	81.5	1384	68.3
CANADA	22850	9407	7631	81.1	6638	70.6

Source: *User's Guide*, Special Surveys Division, n.d., p. 32-33

Study Sample

Data compiled through the 1997 NGS was downloaded for this study through the *Internet Data Library System* (University of Western Ontario, 2001). It should be noted that because of confidentiality, information on some of the variables included in the *Survey of 1995 Graduates in 1997* was not available through the DLI. However, all

variables used in this study were available. Data for Master's graduates exclusively was extracted from the larger data set. The Statistics Canada variable, HLOS95P, which denotes the level of education attained by graduates in 1995, was used. A statistical software package elicited this data.

Treatment of the Data

From the new Master's graduates' data set, a variable was created to reflect the age categories used as the primary independent variable in this study. Statistics Canada's variable, GRADAGEP, denoting the age of each graduate in 1995, was used to perform this task. The specific age categories created were under age 25; 25 to 29; 30 to 34; 35 to 39; 40 to 44; 45 to 49; and age 50 and over. Five-year age categories were selected to provide a manageable number of intervals yet, allow the data to be summarized in small enough categories to detect variation. Five-year intervals have also been used in a variety of other survey reports such the Northern Alberta Institute of Technology (2000), as well as aspects of Little and Lapierre (1996) and Taillon & Paju (1999). However, the categories, *less than 18*; *18 – 21*; and *22 – 24*, as used in the NGS' summary reports (Little & Lapierre, 1996; Taillon & Paju, 1999), were combined in this study to form the category *less than 25*. This was done since, as a second degree, very few Master's graduates fell within these parameters (see Table 1).

The Statistics Canada variable, GNDNP, denoting gender was used as a layered independent variable in this study. The dependent variables included in this analysis were divided into two main categories, a study and a post-graduation profile. The selection of

these variables reflects those included in Taillon & Paju (1999) and Finnie (1999) in which study and post-graduation findings were presented by educational level but not by age groups within educational levels. Variables included in this study are defined at the end of this section.

As recommended by Statistics Canada in Section 9.3, (SSD, p. 42), prior to performing statistical procedures, all variables were weighted using Statistics Canada's variable, S95GWGT. Cross-tabulations were then performed between the age group and gender independent variables, and the selected dependent variables. Statistics Canada's *Approximate Sampling Variability Table for MASTER'S CANADA* (IDLS, 2001, Coefficients of Variants Tables) were used to determine approximate coefficients of variation for each cross-tabulation result. Coefficients of variation values allowed estimates to be categorized as being of releasable, marginal or unacceptable quality. Adhering to Statistics Canada's DLI release guidelines (SSD, n.d., p. 43), data estimates having a sample size of less than 30 or very high coefficients of variation in excess of 33.3 percent were not acceptable for release. As well, data estimates having a sample size of 30 or more, but with coefficients of variation in the range of 16.6 percent - 33.3 percent, were considered to be of marginal, but releasable quality (SSD, n.d., p. 45). To determine the Coefficients of Variation for estimates calculated for this study, the number as well as percentage of graduates in each cell of every cross tabulation was reviewed. Using Statistics Canada's guidelines for determining coefficients of variation (SSD, n.d., p. 51, Example 2), the intersection of the rounded number and rounded percentage on the *Approximate Sampling Variability Table for MASTER'S CANADA* (IDLS, 2001,

Coefficients of Variants Tables) enabled an approximate coefficient of variation to be determined. Estimates in the unacceptable range are not reported. Estimates in the marginal quality range are flagged with an asterisk (*) in the text. Within bar graph charts, which are utilized to convey patterns in the results (Chapter Four), striped rather than solid colour bars are used to indicate marginal estimates. Moreover, all "estimates [were]...rounded using normal rounding...[and] no unrounded estimates have been released...[since] unrounded estimates imply greater precision than actually exists" (SSD, n.d., p. 39).

Chi Squares were also performed for each cross tabulation as a measure for significance of the relationship between the independent variables of age and gender and the dependent variables of interest. Reflecting the large sample size and the number of cross tabulations performed, a significance level of $p < .001$ was used.

Study Variables

Definitions of the variables used in this study have been categorized in the following sub-sections into study and post-graduation aspects and, secondly, according to their role as independent and dependent variables. All variables are presented in the order they are analyzed in Chapter IV.

Independent Variables: Study and Post-Graduation Profiles

Age-group.

The percentage of graduates in each of the following age groups under age 25; 25 to 29; 30 to 34; 35 to 39; 40 to 44; 45 to 49; and age 50 and over.

Gender.

The percentage of male and female graduates in each age group.

Dependent Variables: Study Profile

Region.

The percentage of graduates who resided in each of Canada's four regions before enrolling. Specifically, these regions are Atlantic Canada (Newfoundland, Nova Scotia, Prince Edward Island and New Brunswick); Quebec; Ontario; and Western Canada (British Columbia, Alberta, Saskatchewan, Manitoba, Yukon Territory, Northwest Territory [which in 1995 included Nunavut]).

Reasons for enrolling.

The percentage of graduates who chose on a scale of one to five (five being very important) that the following reasons for enrolling were very important (assigned a ranking of five). These were the importance of acquiring the skills for a particular job, the importance of acquiring an in-depth knowledge of a field of study, and the importance of having the chance of a good income.

Field of Study.

The percentage of graduates in each of the University Student Information System major field of study code groups (IDLS, 2001, Appendix B). The disciplines in each major field of study group are listed in Appendix B of this report. Major field of study groups used included Educational, Recreational and Counseling Services; Fine and Applied Arts; Humanities and Related Fields; Social Sciences and Related Fields; Commerce, Management and Business Administration; Agricultural and Biological Sciences/Technologies; Engineering and Applied Sciences; Engineering and Applied Sciences Technologies and Trades; Health Professions, Sciences and Technologies; and Mathematics and Physical Science.

Study mode.

The percentage of graduates who studied full-time, part-time or a combination of full-time and part-time.

Educational funding sources.

The percentage of graduates who used each of the following as one of three main funding sources: employment earnings; scholarships/awards/fellowships; non-government loans; and bursaries. Also, the percentage of graduates who borrowed government student loans.

Dependent Variables: Post-Graduation Profiles

Accumulated debt.

The amount of debt incurred through government loans at 1995 graduation. Debt is grouped into the categories: less than $1,000; $1,000 to $1,999; $2,000 to $2,999; $3,000 to $3,999; $4,000 to $4,999; $5,000 to $9,999; $10,000 to $29,999; and $30,000 to $99,995.

Job search experiences.

The percentage of graduates that had no difficulty finding a job related to their studies, finding a job that paid enough, or finding a job where they wanted to live.

Job characteristics.

The percentage of graduates who, in 1997, were employed, worked full-time (30 or more hours per week), and/or were supervising the work of other employees.

Job - education match.

The percentage of graduates who had higher, the same, or lower levels of education then specified for their 1997 position. Also, the percentage of graduates, on a scale of one to three (three being very important), who said their 1997 job was very closely related to their education.

Income.

The percentage of graduates who had estimated gross annual earnings for 1997 in each of the following categories: less than $10,000; $10,000 to $19,000; $20,000 to $29,000; $30,000 to $39,000; $40,000 to $49,000; and $50,000 or more.

Plans to pursue a Ph.D.

The percentage of graduates who stated they planned to pursue a Ph.D.

Summary

Statistics Canada data from the *1997 Survey of 1995 Graduates* was obtained through the IDLS (University of Western Ontario, 2001). A data sub-set for 1995 Master's graduates only was then extracted using a statistical software package. A new independent variable denoting seven age groups for these graduates was calculated. The age groups used were under age 25; 25 to 29; 30 to 34; 35 to 39; 40 to 44; 45 to 49; and age 50 and over. Gender was used as a layered independent variable. The dependent variables used included aspects of the study experience: region, field of study, study mode, reasons for enrolling and educational funding sources. Variables denoting aspects of post-graduation experiences included: accumulated debt, job search experiences, job characteristics, job-education match, income and plans to pursue further formal education. Cross tabulations and Chi Square tests were performed between the independent and dependent variables. Coefficients of Variation were determined for each cross tabulation estimate. Data are reported according to Statistics Canada guidelines (SSD, n.d.).

Chapter IV: Results

Introduction

The following sections present the results of cross-tabulations and chi-square tests performed between the independent and dependent variables. Findings are presented in narrative as well as chart form. Charts were chosen to convey the results so that trends could be easily observed; nevertheless, charts do not allow readers to detect exact numeric results. For reference, the results of all calculations and the sample sizes for each gender in each cross-tabulation can be found in Appendix C.

As stated in *Chapter Three: Methodology*, five-year age categories were chosen as a means to analyze the lifelong learning patterns of this study population. Five-year age categories enable a detailed picture of experiences and have been used in previous similar studies (Northern Alberta Institute of Technology (2000), as well as aspects of Little and Lapierre (1996) and Taillon and Paju (1999). However, when cross-tabulations were performed with dependent variables that also contained several categories, some estimates of releasable, but marginal, quality resulted. Marginal results must be interpreted with caution. Statistics Canada's definitions for determining acceptable, unacceptable and marginal quality for results are detailed in Chapter Three, p. 62 of this study. Results of marginal quality are marked with an asterisk (*) when referred to in the text. In bar graphs, striped rather than solid color bars are representative of marginal quality results.

This chapter begins by reporting the distributions of the age group and gender independent variables used. This is followed by summaries of the cross-tabulations for

each dependent variable in each research question. The results of Pearson chi-square tests showed every cross-tabulation performed was significant to the $p < .001$ level. The sample size, degrees of freedom and x^2 values for each chi-square are reported in each of the following subsections.

Age Group

Figure 1 shows the distribution of 1995 Master's graduates by graduation age. For both males and females, the largest percentages of graduates were in the 25 to 29 age group. Of all male and female graduates, 39% and 32% respectively were in this category. Male graduates outnumbered female graduates in the 25 to 29 and 30 to 34 age groups, but the trend reversed itself in older age groups. Specifically, there were more females in the 40 to 44, 45 to 49, and 50 and over age groups. In the 35 to 39 age group the number of Master's degrees earned by males and females was equivalent at 13%. In all, 50% of male graduates and 57% of female graduates in 1995 were in the age categories 30 to 34 or over. The chi-square result for the relationship between age and gender was $x^2(6, N = 18{,}242) = 335.122, p < .001$.

Gender

As reported in Taillon & Paju (1999), women earned 53% of Master's degrees awarded in Canada in 1995. Nonetheless, the percentage of degrees earned by each gender varied by age group. *Figure 2* presents the gender distribution of 1995 Master's graduates in each age group. Calculations show relatively equal gender representation

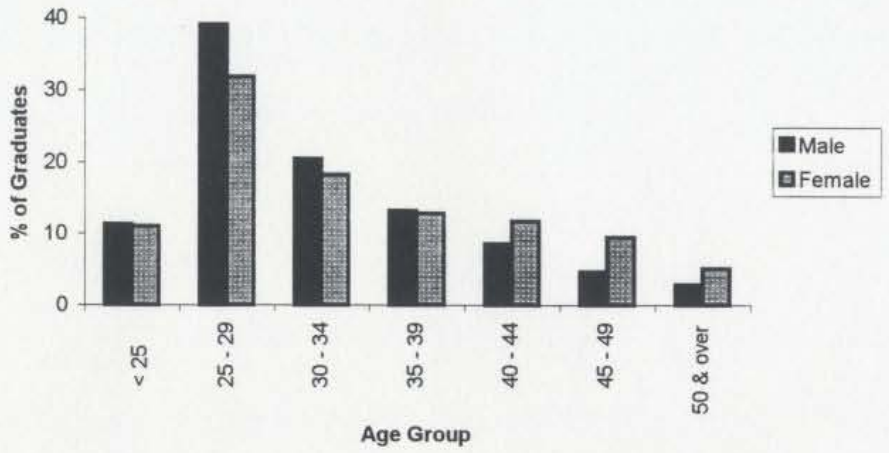

Figure 1. The distribution of 1995 Master's graduates by age group and gender.

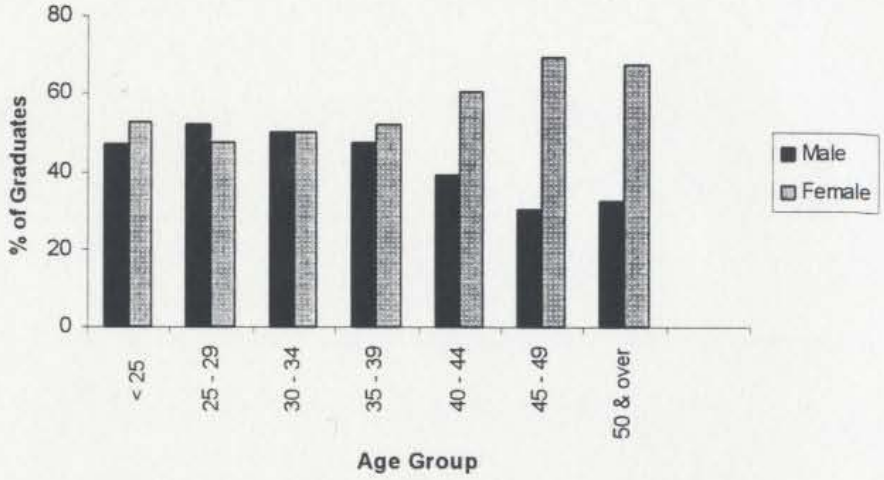

Figure 2. The gender distribution for each age group of 1995 Master's graduates.

in the age groups, under 25, 25 to 29, 30 to 34, and 35 to 39; however, the percentage of degrees earned by females increased significantly after this point. In the 40 to 44 age

group, 61% of graduates were female and in the 45 to 49 age group this figure grew to 70%. Though reducing slightly after this point, the percentage of female graduates in the 50 and over age group was still 67%. The result of the chi-square test between age group and gender is reported in the age group subsection.

Research Question One

The following subsections summarize the results of research question one: how did the study profiles of Master's graduates, by age group and their gender subgroups, differ by region, reasons for enrolling, field of study, study mode (part-time, full-time or combination) and/or educational funding sources?

Region.

Figure 3 presents the distributions by age group and gender for each region of Canada. The age group distributions of male Master's graduates from Quebec, Ontario and the Western Provinces and Territories showed similar patterns. In each case, over 30% of graduates were in the 25 to 29 age group. The percentage of degrees earned by males from these regions, decreased steadily from the age group 30 to 34 to the 50 and over age group. In the Atlantic Provinces, the distribution of male graduates was flatter. Twenty-six percent of male graduates from the Atlantic Provinces were in the 25 to 29 age group, 20%* were 30 to 34 and 20%* were in the 35 to 39 age group.

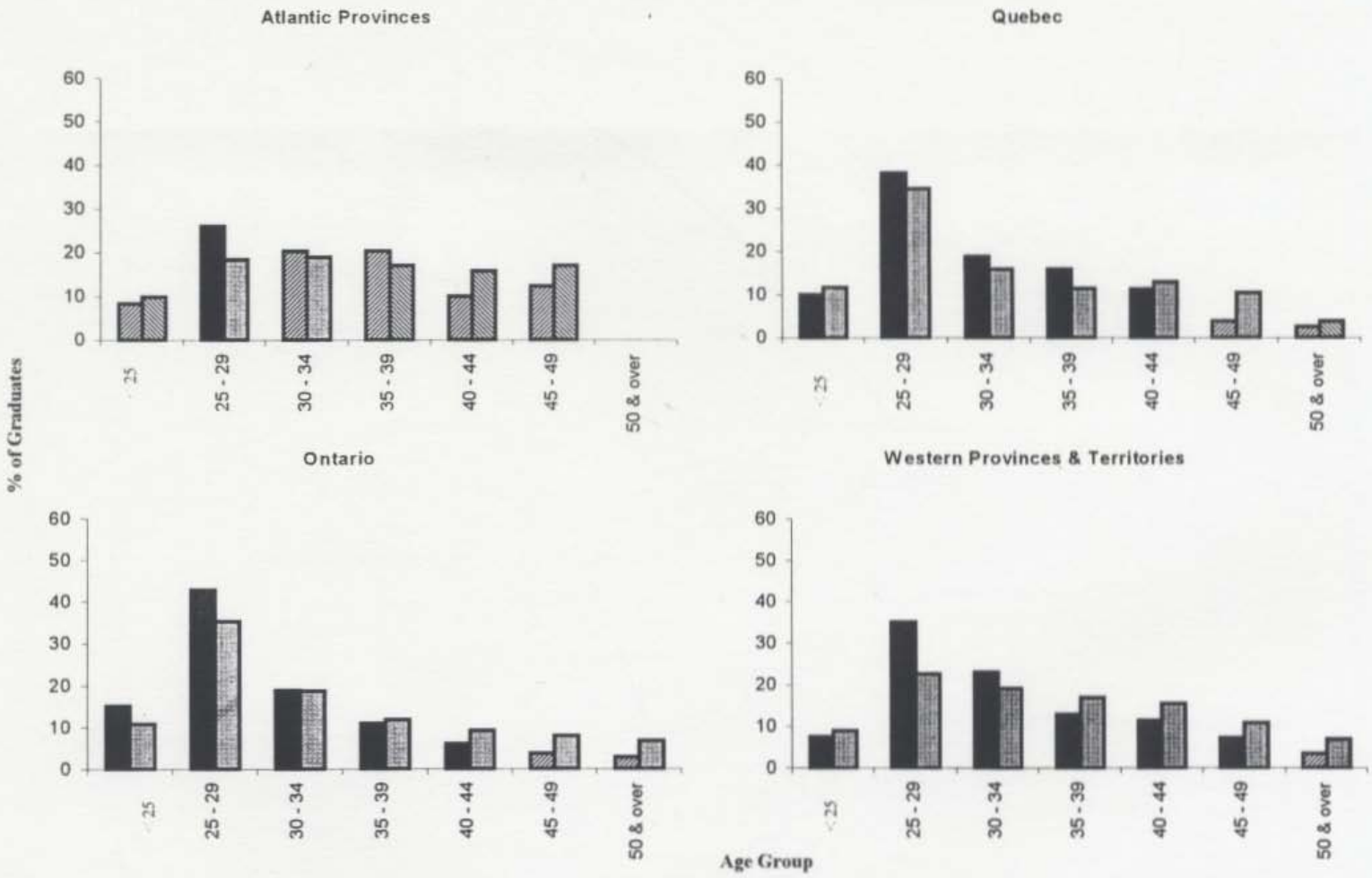

Figure 3. The age group distributions of Master's graduates by region of residence prior to enrollment. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

Female graduates from Ontario and Quebec showed similar distributions to males in Quebec, Ontario and the Western Provinces and Territories. Specifically, most Ontario and Quebec female graduates were in the 25 to 29 age group and showed rapid declination of degrees earned by individuals in the 30 to 34, to the 50 and over age group. Female graduates from the Atlantic and Western Provinces and Territories, however, showed flatter patterns that were similar to males from the Atlantic Provinces. From both the Western Provinces and Territories, and the Atlantic Provinces, 69% of female graduates were in the age groups 30 to 34, to 50 and over. In Ontario, this figure was 55% and for graduates who resided in Quebec prior to enrollment, 54% were in the age group 30 to 34 or over at the time of graduation. Chi-square results between age and region were $x^2(30, N = 8,580) = 394.829$, $p < .001$ for males and $x^2(30, N = 9,662) = 520.051$, $p < .001$ for females.

Reasons for Enrolling.

Figure 4 shows the percentage of graduates in each age group who said that acquiring an in-depth knowledge in a field of study, acquiring the skills for a particular job, and having the chance to earn a good income were very important reasons for enrolling. For both genders in all age categories, more graduates said acquiring an in-depth knowledge in a field of study was very important than said acquiring the skills for a particular job or having the chance to earn a good income was very important. Fifty-nine percent to 66% of male graduates in every age category said acquiring an in-depth

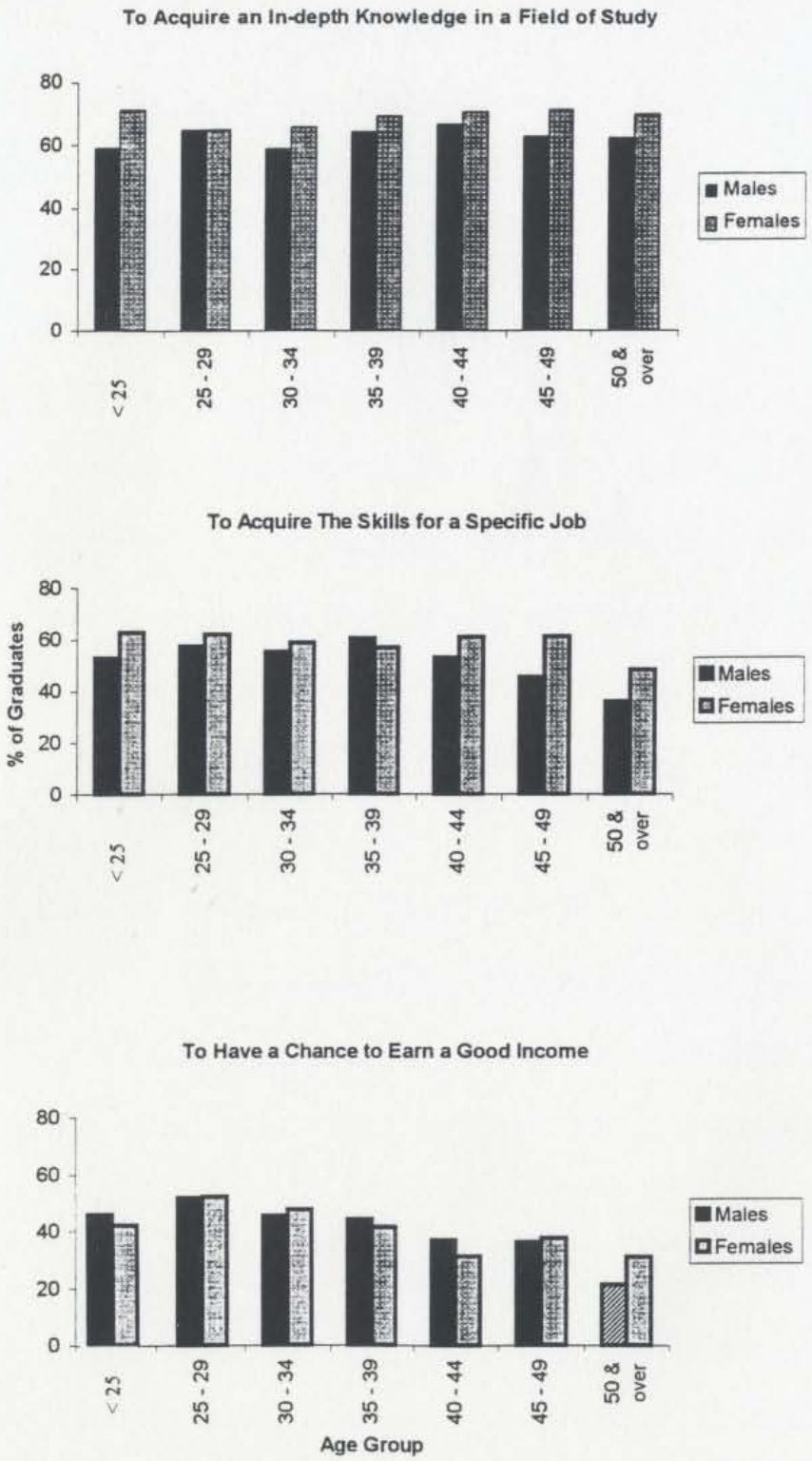

Figure 4. The percentage of Master's graduates in each age group by gender who said each of these reasons for enrolling was very important. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

knowledge in a field of study was a very important reason for enrolling, while 65% to 71% of females said so. Chi-square results between age and the importance of acquiring an in-depth knowledge in a field of study as a reason for enrolling were $x^2(18, N = 8,545) = 94.846, p < .001$ for males and $x^2(18, N = 9,585) = 126.790, p < .001$ for females.

From the under 25, to the 35 to 39 age group, the percentage of male graduates who indicated acquiring the skills for a particular job was a very important reason for enrolling fluctuated between 53% and 60%. The percentage of male graduates who stated this was a very important reason for enrolling declined with age, though an increase is notable in the 45 to 49 age group. Only 36% of male graduates age 50 or over felt acquiring the skills for a particular job was very important. For female graduates, the percentage who said acquiring the skills for a particular job was a very important varied little between the under 25 age group (63%) and the 45 to 49 age group (61%). However, only 48% of female graduates age in the age 50 and over group said acquiring the skills for a particular job was a very important reason for enrolling. Chi-square results between the age and the importance of acquiring the skills for a particular job as a reason for enrolling were $x^2(18, N = 8,535) = 168.525, p < .001$ for males and $x^2(18, N = 9,563) = 359.773, p < .001$ for females.

While 46% of male graduates in the under 25 age group said having the chance to earn a good income was a very important reason for enrolling, this number grew to 52% for the 25 to 29 age group. From the age group 30 to 34 to 50 and over, however, the number of graduates who said the chance to have a good income was very important decreased. Not surprisingly, given retirement ages, only 21%* of male graduates in the

50 and over age group cited the chance to earn a good income was a very important reason for enrolling. For females, over 42% of all graduates from the under 25 to the 35 to 39 age group felt the chance to earn a good income was very important. Thirty-one percent of female graduates in the 40 to 44 and 50 and over categories ranked the chance to earn a good income as very important. In the 45 to 49 age category the percentage was slightly higher at 38%. Chi-square results between age and the importance of having the chance to earn a good income as a reason for enrolling were $x^2(18, N = 8,539) = 696.412$, $p < .001$ for males and $x^2(18, N = 9,577) = 527.575$, $p < .001$ for females.

Field of Study.

Figure 5 shows the distributions of Master's graduates by age group for each major field of study group. The following sub-sections describe the age group graduation patterns for each field of study group. Chi-square results between the age and field of study were $x^2(54, N = 8,572) = 1732.441$, $p < .001$ for males and $x^2(54, N = 9,629) = 2072.369$, $p < .001$ for females.

Graduates in the Education, Recreational and Counseling Services group showed the most evenly divided age group distribution of all field of study groups; however, some variation was apparent. The highest number of Education, Recreational and Counseling Services graduates were in the 40 to 44 age group with men earning 21% and women earning 22% of degrees in this category. It should be noted that in all other field

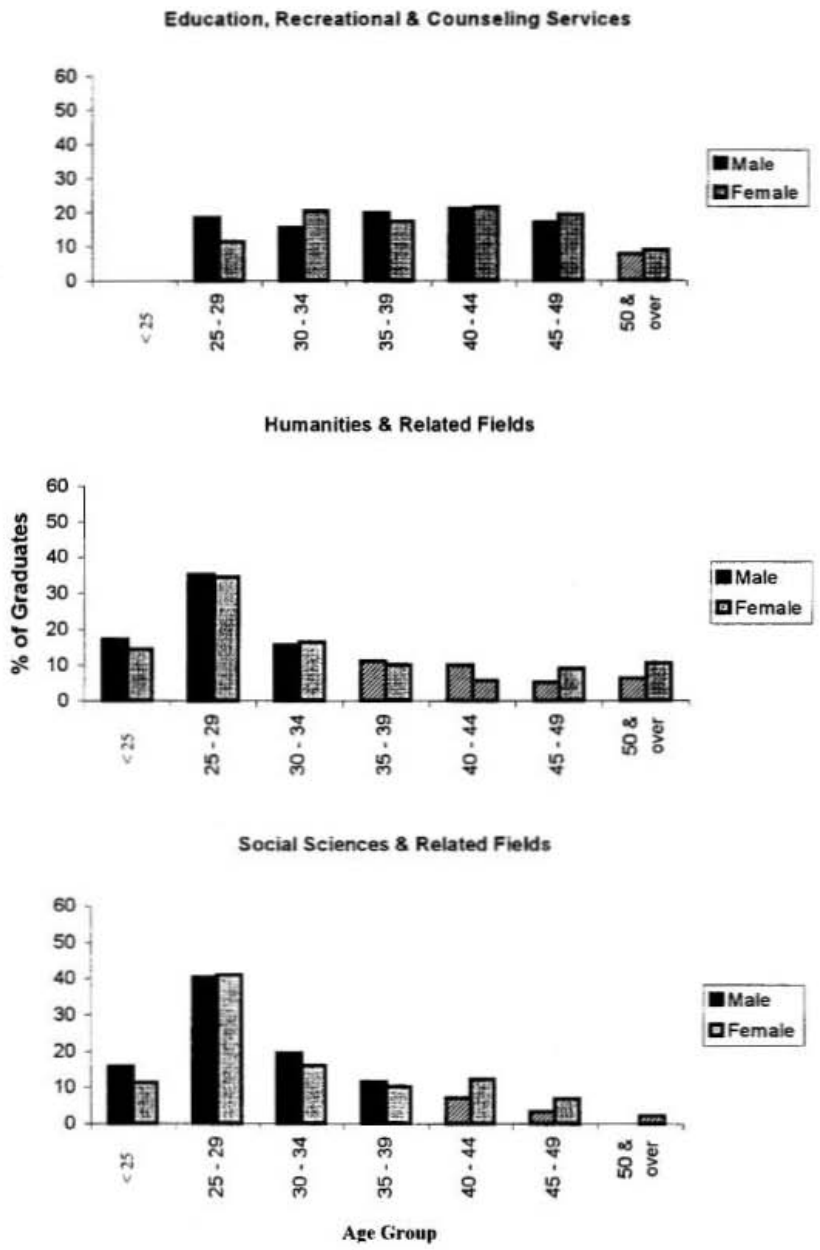

Figure 5. The distributions of Master's graduates in each Major Field of Study Group by age group and gender. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

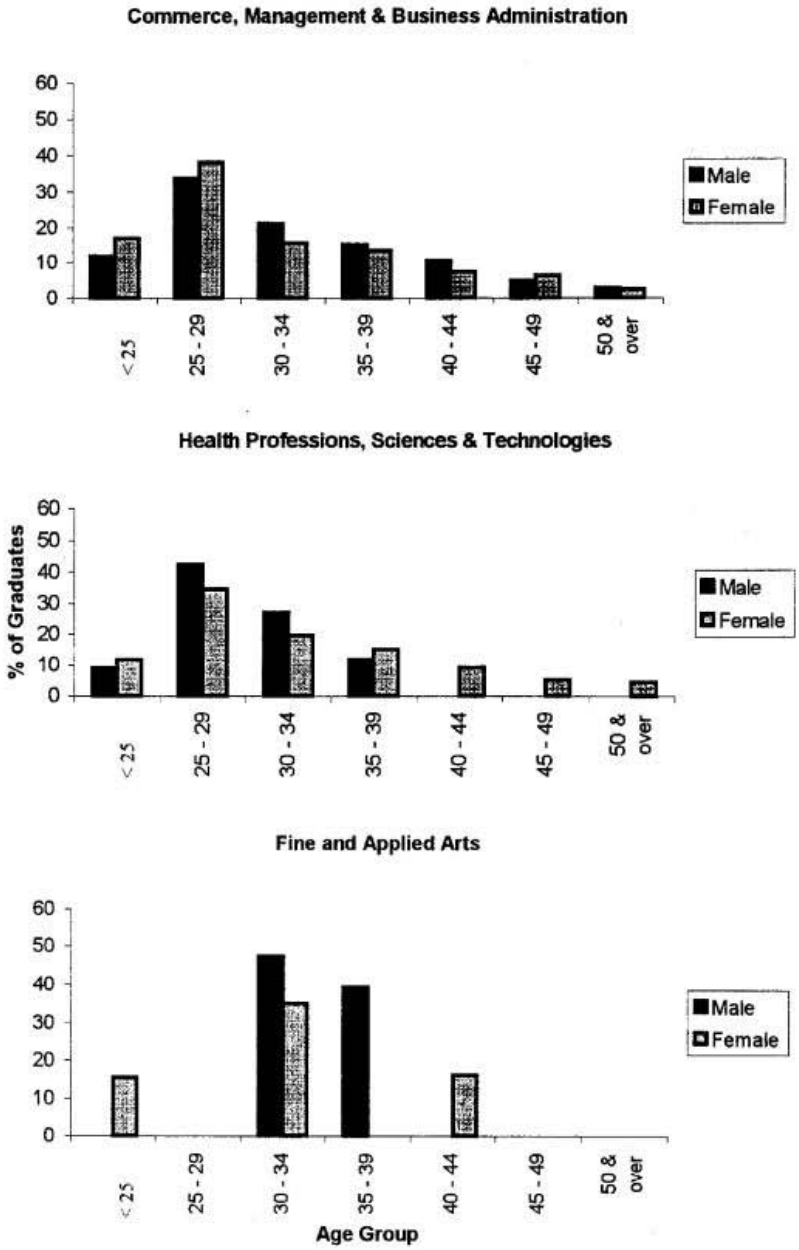

Figure 5 cont. The distributions of Master's graduates in each Major Field of Study Group by age group and gender. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

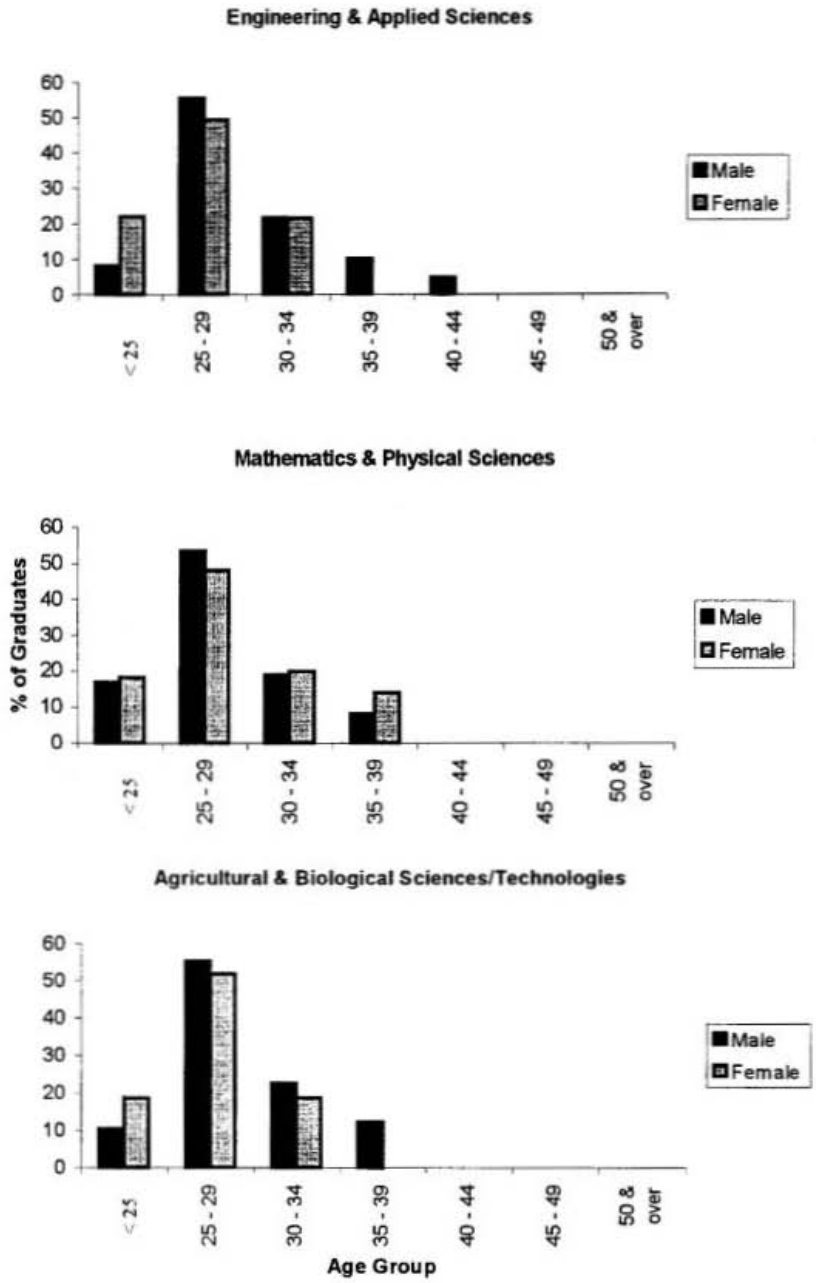

Figure 5 cont. The distributions of Master's graduates in each Major Field of Study Group by age group and gender. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

of study distributions, except the Fine and Applied Arts, the largest numbers of graduates were within the 25 to 29 age group. The fewest male and female graduates in Education, Recreational and Counseling Services were in the 50 and over age category at 8%* and 9% respectively.

The distribution of Fine and Applied Arts graduates showed a very different pattern than did any other field of study group. A linear pattern of participation was not apparent, but rather there were pockets of participation. It should be noted that overall, only 2% of Master's graduates fell into this category (see Table 2). As a result, all findings for this field of study group were of marginal quality. Nonetheless, these estimates showed 51%* of Fine and Applied Arts graduates were female and, of these graduates, 16%* were under 25, 35%* were 30 to 34, and 15%* were 40 to 44. Forty-seven percent* of male Fine and Applied Arts graduates were in the 30 to 34 category while 39%* were in the 35 to 39 category.

The Humanities and Related Fields were similar to the Social Sciences; Commerce, Business, Management; Agricultural and Biological Sciences; Engineering and Applied Sciences; Health Professions; and Math, Physics and Pure Sciences, in that the percentage of graduates for both genders in the 25 to 29 age category was significantly higher than all other age categories. Specifically, 35% of male and 34% of female graduates were in the 25 to 29 age category. Relatively equivalent gender proportions of graduates in the age groups under 25 (17% male, 14% female) and 30 to 34 (16% of males and 16% of females) earned Master's degrees. The proportion of male graduates decreased between the age groups 35 to 39 (11%*) and 45 to 49 (5%*), but

increased slightly in the age 50 and over age category to 6%*. Degrees earned by females followed a similar pattern; however, females earned slightly fewer degrees than males in the under 25, 25 to 29, 35 to 39, and 40 to 44 age categories.

In the under 25, 30 to 34, and 35 to 39 age groups, males earned higher proportions of degrees in the Social Science and related fields; however, females earned one percentage point more (41%) of the degrees in the 25 to 29 age group. Both males and females showed a general declination in degrees earned from the age group 30 to 34 on. Females earned a higher proportion of the degrees awarded to individuals in the 40 to 44, 45 to 49, and the 50 and over age categories.

In all age groups 30 to 34 and over, the proportion of degrees earned by both females and males declined in Commerce, Management and Business Administration. Also notable is that females earned a higher proportion of Master's degrees than males in the under 25 (17% female, 12% male), and the 25 to 29 (38% female, 34% male) age groups. Only 3%* of male and female graduates were in the 50 and over age group.

The Agricultural and Biological Sciences/Technologies showed a distribution of graduates that was very similar to the Mathematics and Physical Sciences, and Engineering and Applied Sciences. Specifically, 99% of all male graduates were 39 years of age and younger. For females, 90% of all degrees were earned by individuals 34 years of age and younger. Fifty-five percent of male graduates and 52% of female graduates were in the 25 to 29 age category.

Ninety-two percent of degrees earned by females in the Engineering and Applied Sciences were awarded to individuals who were 30 to 34 years of age or younger. A few

males earned degrees in these disciplines at older ages. Ten percent of male graduates were in the 35 to 39 age group and 5%* were in the 40 to 44 age group.

The distributions of male and female graduates in the Health Professions, Sciences and Technologies were also notably different than other field of study groups. The pattern of degrees earned by males strongly resembles that of Engineering and Applied Sciences, Mathematics and Physical Sciences and the Agricultural and Biological Sciences/Technologies. Forty-three percent of male graduates were 25 to 29 and 91% were 34 to 39 or under. The distribution of female graduates, however, was divided more evenly across age groups and strongly resembled the Social Sciences, Humanities and Commerce related fields. Thirty-five percent of female graduates were 25 to 29, 33% were 35 to 39 or over.

Ninety-seven percent of male graduates and 100% of female graduates in the Mathematics and Physical Sciences were 35 to 39 or younger. Female graduates earned a higher proportion of degrees in the under 25, 30 to 34, and 35 to 39 age groups. Fifty-three percent of all male graduates were in the 25 to 29 age group.

Study Mode.

Figure 6 shows the percentage of graduates in each age group who studied full-time, part-time, or a combination of full and part-time. The percentage of graduates studying full-time declined with age from the under 25 to the 45 to 49 age group for both males and females. For females, the percentage studying full-time continued to decline in the 50 and over age group, while for men the percentage of graduates who studied full-

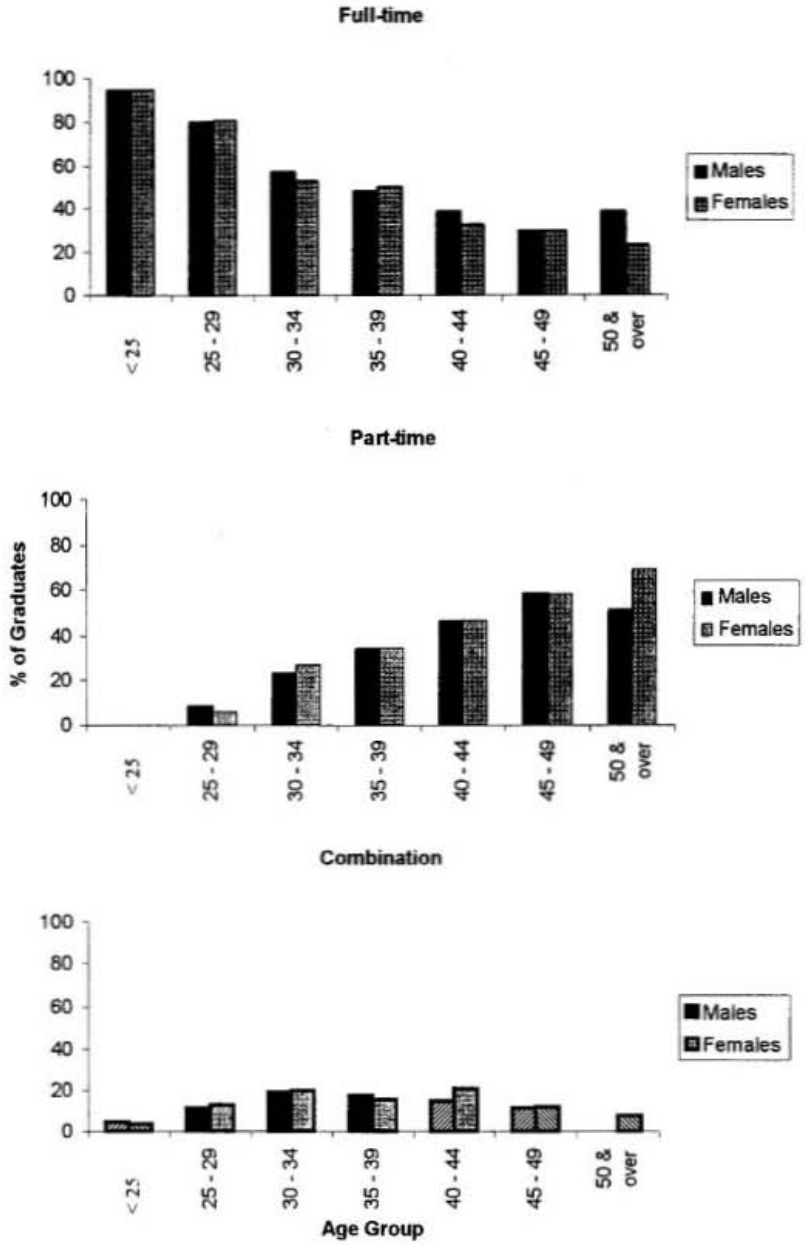

Figure 6. The percentage of Master's graduates in each age group by gender who studied through full-time, part-time or a combination of full and part-time study. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

time rose from 30% in the 45 to 49 age group to 39% in the 50 and over age group. The pattern of graduates who studied part-time showed an almost reciprocal pattern. The percentage of females studying part-time increased with age from 6% in the 25 to 29 age group to 69% in the 50 and over age group. The number of male graduates who had studied part-time also increased with age from 9% in the 25 to 29 age group to 59% in the 45 to 49 age group. In the 50 and over age group, however, the percentage of male graduates who had studied part-time decreased to 52%.

The percentages of graduates who earned their degree through a combination of full and part-time study remained at 21% or under for all age groups. Less than 8%* of graduates who were under 25, or 50 and over, studied through a combination of full and part-time study. For all study modes, patterns for males and females were highly similar. Chi-square results between age and study mode were $x^2(12, N = 8,582) = 1773.916, p < .001$ for males and $x^2(12, N = 9,555) = 2691.593, p < .001$ for females.

Educational Funding Sources.

Figure 7 shows the percentage of graduates in each age group who used employment earnings and scholarships as one of three main educational funding sources. The percentage of graduates who stated employment earnings were one of three main funding sources for their Master's degree increased slightly with age. Sixty-six percent of male graduates in the under 25 age group said employment earnings were a primary funding source, while this figure was 79% for male graduates in the 50 and over age group. For female graduates, the use of employment earnings as a primary funding

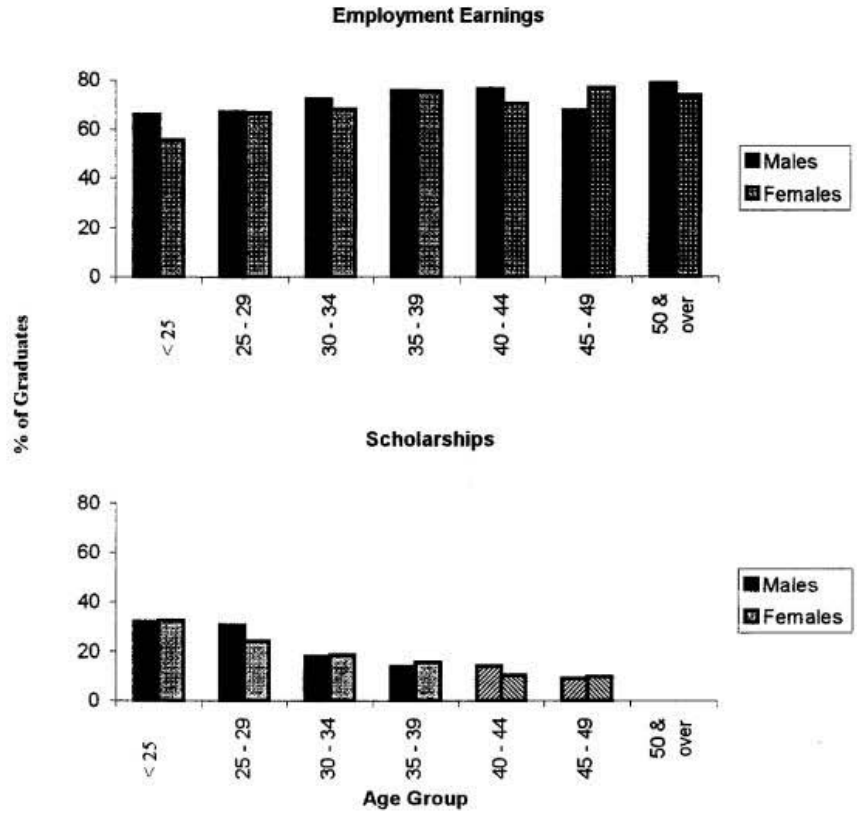

Figure 7. The percentages of Master's graduates in each age group by gender that used employment earnings or scholarships as one of three main educational funding sources. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

source also increased with age. Only 56% of female graduates under 25 cited employment earnings as a main funding source, while 74% of graduates age 50 and over did so. An exception to this were females in the 45 to 49 age group, in which the percentage using employment earnings (70%) was less than in the 40 to 44 age group (75%). Chi-square results between the age and employment earnings as one of three main

funding sources were $x^2(6, N = 8{,}522) = 65.526$, $p < .001$ for males and $x^2(6, N = 9{,}584) = 150.313$, $p < .001$ for females.

Less than 32% of graduates in all age groups cited scholarships as a main funding source. Younger graduates were more likely than older graduates to have used scholarships as one of three main funding sources. Thirty-two percent of male and female graduates in the under 25 age group cited scholarships as one of three main funding sources. Only 9%* of males and 10%* of females in the 45 to 49 age group cited scholarships as one of three main funding sources. Chi-square results between age and scholarships as one of three main funding sources were $x^2(6, N = 8{,}505) = 324.316$, $p < .001$ for males and $x^2(6, N = 9{,}581) = 355.663$, $p < .001$ for females.

Less than 7%* of graduates in all age categories stated bursaries were a main funding source. Chi-square results between the age bursaries as a main funding source were $x^2(6, N = 8{,}487) = 73.915$, $p < .001$ for males and $x^2(6, N = 9{,}564) = 26.994$, $p < .001$ for females. There were not enough Master's graduates in each age group who used non-government student loans as a main funding source to provide data for the category.

Younger graduates also were more likely to report that they borrowed government student loans. *Figure 8* presents the percentage of graduates in each age category who stated they had borrowed government student loans. Fifty-four percent of males and 57% of female graduates in the under 25 age group stated that they borrowed government student loans. Still, 30% of males and 17% of females in the 45 to 49 age group also borrowed government student loans. Chi-square results between the age and gender

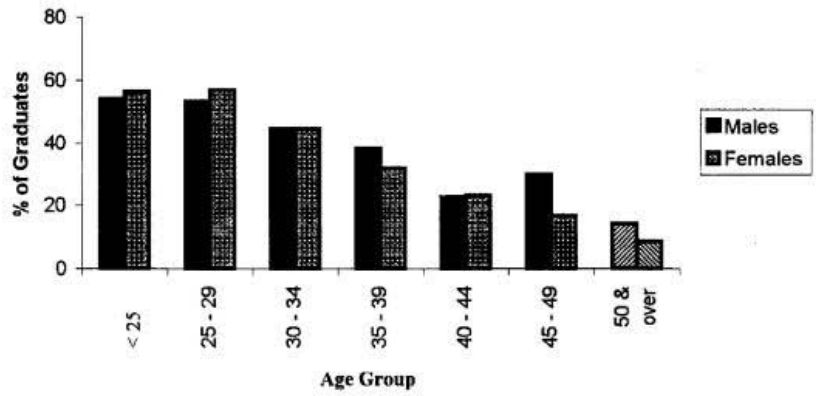

Figure 8. The percentage of 1995 Master's graduates in each age group by gender who borrowed government student loans. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

independent variables and borrowing government student loans were: $x^2(24, N = 8{,}580) = 693.241$, $p < .001$ for males and $x^2(24, N = 9{,}659) = 1178.001$, $p < .001$ for females.

Research Question Two

The following subsections summarize the results of research question two: how did the post-graduation profiles of Master's graduates, by age group and their gender sub-groups, differ by accumulated debt, job search experiences, job characteristics, job–education match, earnings and/or plans to pursue a Ph.D.?

Accumulated Debt.

Of the graduates who borrowed government student loans, the most common amount of accumulated debt for the under 25 to 40 - 44 age groups was $10,000 to $29,999. *Figure 9* shows the percentage of graduates in each age category who borrowed $10,000 to $29,999. The percentage of males owing $10,000 to $29,999 increased from

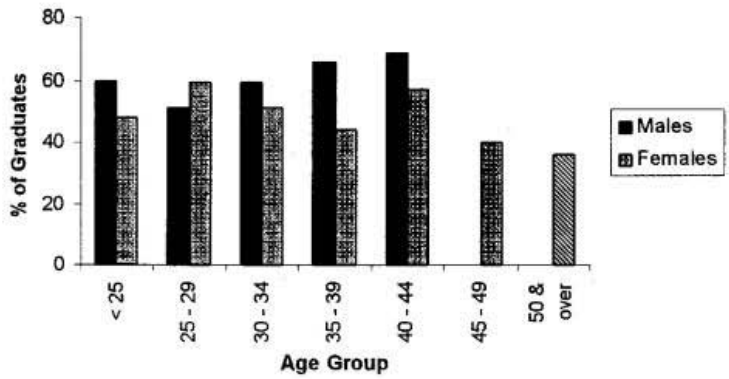

Figure 9. Of the 1995 Master's graduates who borrowed government student loans, the percentages in each age category by gender who owed $10,000 to $29,999 at the time of graduation. Note: Striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

the 25 to 29 age group (51%) to the 40 to 44 age group (69%). Males in the 45 to 49 age group had the lowest proportion who borrowed $10,000 to 29,999 at 30%. Males in the 45 to 49 age group, however, were more likely to have paid off any amount owing to government student loans at the time of graduation (35%*). The percentage of females who owed $10,000 to $29,999 at graduation followed a different pattern. Female

graduates in the 25 to 29 and 40 to 44 age groups were the most likely to have owed $10,000 to $29,999 at graduation at 59% and 57% respectively. Females in the 35 to 39 and 45 to 49 and over age categories were less likely to have owed this amount. In these age categories, the percentage who owed $10,000 to $29,999 ranged from 35% to 44%. Chi-square results for age group and accumulated debt were $x^2(42, N = 3,215) = 267.092$, $p < .001$ for males and $x^2(42, N = 3,902) = 455.399$, $p < .001$ for females.

Job Search Experiences.

Figure 10 shows the percentage of graduates in each age group who stated they had no difficulty finding a job related to their field of study, that paid well enough, or in a location they desired. Older graduates, particularly males, had less difficulty finding jobs related to their field of study. While 79% of male graduates in the 50 and over age group stated they had no difficulty finding a job related to their field of study, only 32% of male graduates in the under 25 age group noted this. For females, the pattern was flatter. Female graduates in the 45 to 49 age group were the most likely to have no difficulty finding employment related to their field of study (62%), while just 37% of female graduates in the under 25 age group stated they had no difficulty. Chi-square results between age and finding a job related to the graduate's field of study were $x^2(18, N = 6,612) = 318.838$, $p < .001$ for males and $x^2(18, N = 7,542) = 439.054$, $p < .001$ for females.

Older, male graduates were also less likely to have difficulty finding a job that paid well enough. Sixty-eight percent of male graduates who were 50 and over stated

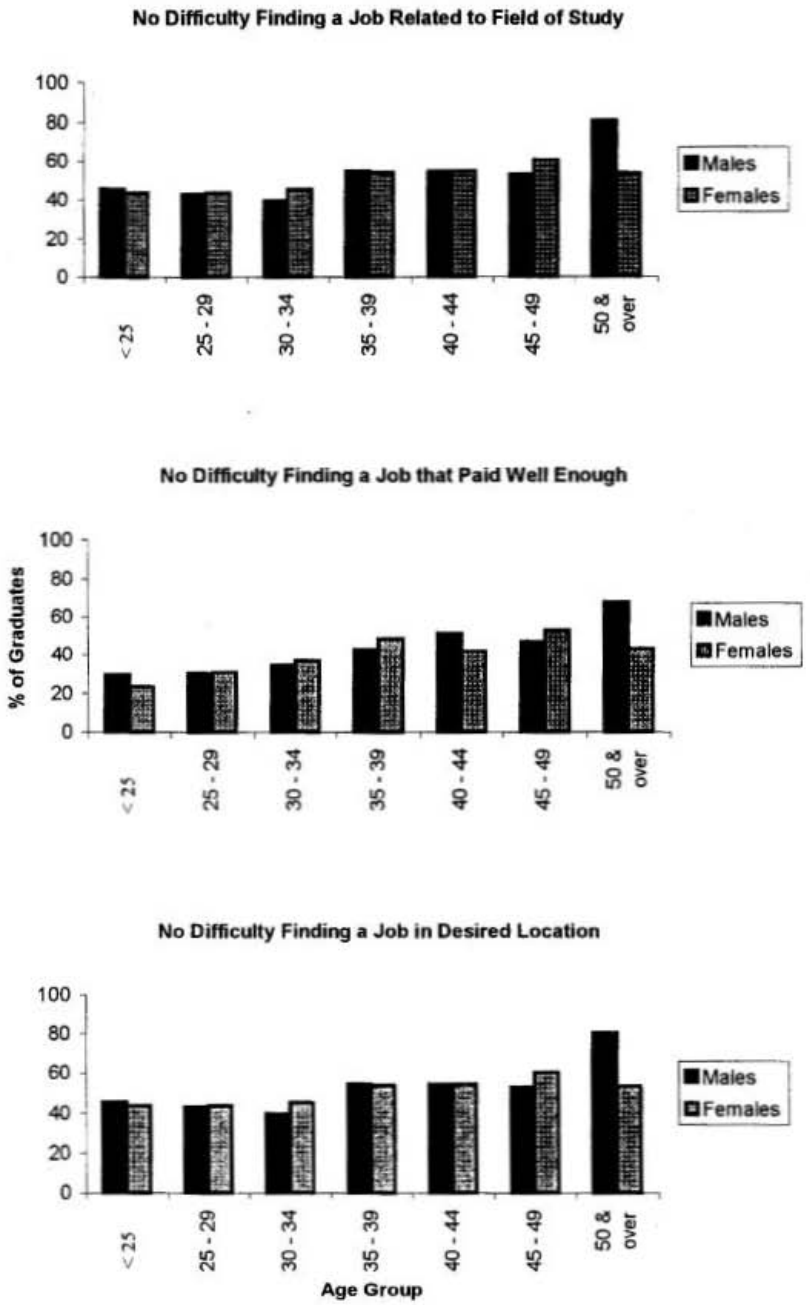

Figure 10. The percentage of 1995 Master's graduates in each age group by gender who had no difficulty finding a job related to their field of study, that paid well enough or in a location they desired.

that they had no difficulty finding a job that paid well enough, while only 30% of graduates in the under 25 age group said so. Among females, there was more variation. Only 24% of female graduates who were under age 25 said they had no difficulty finding a job that paid well enough. Between the age categories 35 to 39 and 50 and over, the percentage of female graduates who had no difficulty varied between 41% in the 40 to 44 age group to 55% in the 45 to 49 age group. Chi-Square results between age and finding a job that paid enough were $x^2(18, N = 6{,}574) = 289.772$, $p < .001$ for males and $x^2(18, N = 7{,}372) = 360.809$, $p < .001$ for females.

In terms of difficulty finding a job where the graduate wanted to live, 39% to 46% of male and female graduates in the under 25 to 30 - 34 age categories stated they had no difficulty. Males in the 50 and over age group were the least likely of all graduates to have difficulty finding employment where they wanted to live; 80% stated they had no difficulty. Nevertheless, 15% to 27% of male and female graduates in all categories stated they had great difficulty finding a job where they wanted to live. Chi-square results between age and finding a job in a desired location were $x^2(18, N = 6{,}601) = 240.505$, $p < .001$ for males and $x^2(18, N = 7{,}599) = 309.219$, $p < .001$ for females.

Job Characteristics.

Two years after graduation, over 70% of Master's graduates in all age groups were employed. *Figure 11* shows the percentage of employed graduates in each age category. The 50 and over age group had the lowest percentage of employed

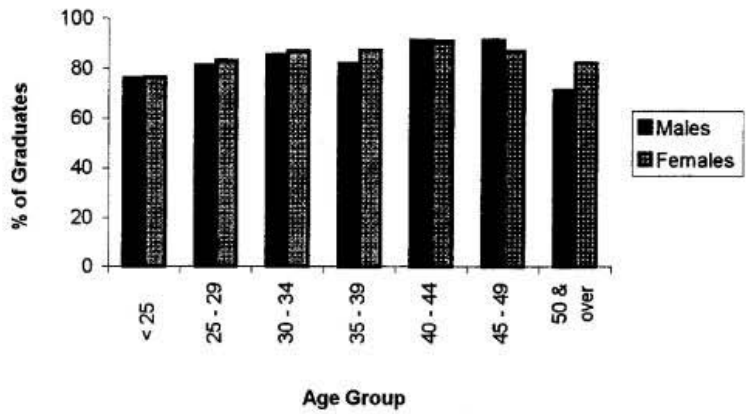

Figure 11. The percentage of 1995 Master's graduates in each age group by gender who were employed in 1997 at the time of interview.

graduates for males (71%). For females, the lowest percentage of employed graduates were in the under 25 age group. The highest percentage of employed graduates for males were in the 40 to 44 and 45 to 49 age groups (91%). Similarly, female graduates who were in the 40 to 44 age group had the highest employment rate (also 91%) two years after graduation. Chi-square results between age and labour force status in 1997 (which included the percentage of graduates who were employed) were $x^2(18, N = 8{,}582) = 308.311, p < .001$ for males and $x^2(18, N = 9{,}661) = 213.622, p < .001$ for females.

Figure 12 shows the percentage of employed graduates in each age group who were working on a full-time basis two years after graduation. Male graduates were more likely than females to be working full-time in every age category. This ranged from 88% in the 50 and over age group, to 98% in the 45 to 49 age group. The percentage of female

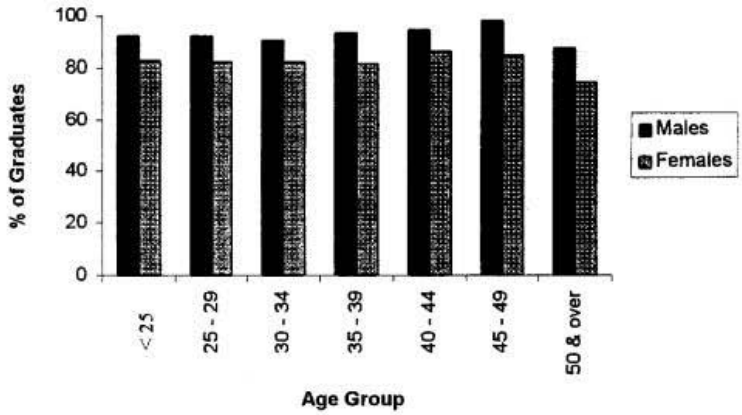

Figure 12. The percentage of employed 1995 Master's graduates in each age group by gender who were working full-time in 1997.

graduates who were employed full-time did not vary significantly with age, with the exception of the 50 and over age group. Only 74% of female graduates in the 50 and over age group were employed full-time; however, the percentage was 82% to 87% in all other age groups. Chi-square results between age and full-time work status were $x^2(6, N = 6{,}936) = 38.261$, $p < .001$ for males and $x^2(6, N = 8{,}086) = 33.058$, $p < .001$ for females.

Figure 13 shows the percentage of graduates in each age group who supervised the work of others as an aspect of their job. Forty-one percent of males in the 25 to 29 age group supervised the work of other employees while this increased to 69% for male graduates in the 45 to 49 category. However, the figure dropped significantly for male graduates of the 50 and over category to 21%*. More male than female graduates in the age categories under 25 to 45 - 49, said they supervised the work of others. In the 50

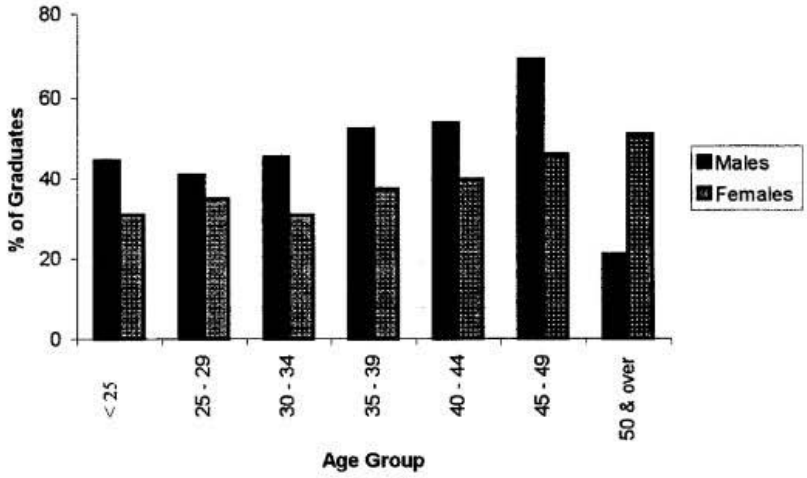

Figure 13. The percentage of 1995 Master's graduates in each age group by gender who supervised the work of other employees in 1997.

and over category, nonetheless, 30% more females (51%) than males (21%*) indicated that they supervised the work of other employees. The percentage of female graduates who supervised other employees increased slightly with age, but fluctuations were apparent between the age groups 25 - 29 to 35 - 39. Chi-square results between age and supervising the work of other employees were $x^2(6, N = 7{,}069) = 179.434$, $p < .001$ for males and $x^2(6, N = 8{,}181) = 105.947$, $p < .001$ for females.

Job-education Match.

Older graduates were more often over-qualified for their positions than were younger graduates. *Figure 14* shows the percentage of graduates in each age group who

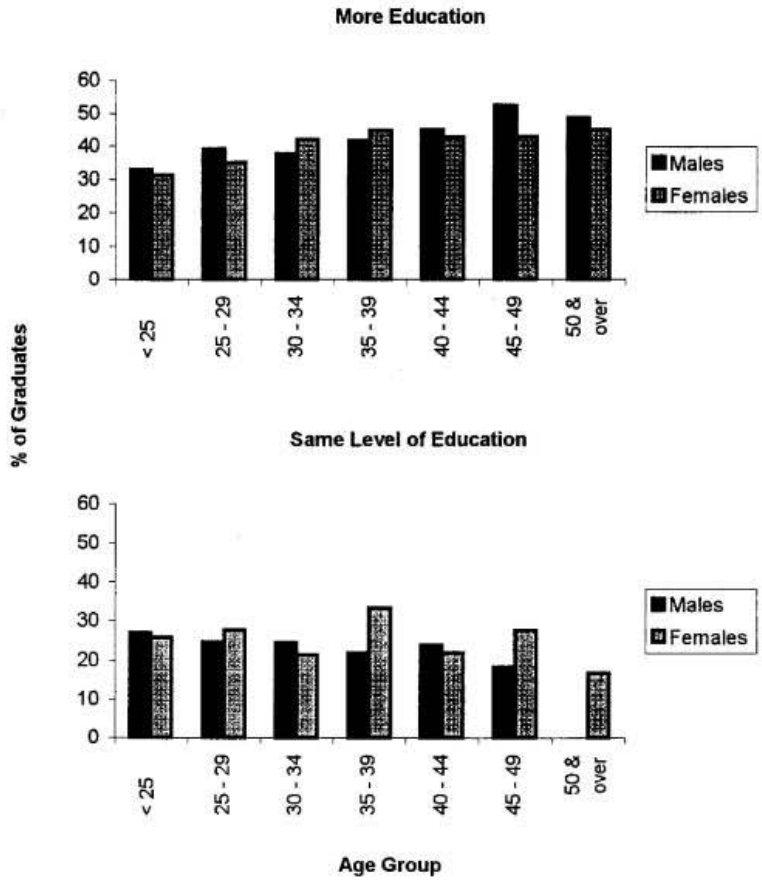

Figure 14. The percentage of 1995 Master's graduates in each age group by gender who had a higher level (more) education or the same level of education as specified by the employer for their 1997 job.

had a higher level of education or the same level of education as their employer had specified for their 1997 job. Fifty-two percent of males and 43% of females in the 45 to 49 age group indicated they had a higher level of education than their employer had specified. In the under 25 age group, only 33% for males and 31% of females had a higher level of education than was specified for their job. In every age group, 18% to

27% of males said their employer had specified a Master's degree for their 1997 job. Female graduates in the 35 to 39 age group were the most likely to work in positions that had specified Master's degrees (33%). Chi-square results between age and educational job requirements were $x^2(30, N = 8,581) = 196.224, p < .001$ for males and $x^2(30, N = 9,660) = 593.167, p < .001$ for females.

Older graduates were more likely to state their job was very closely related to their field of study, with the exception of the 50 and over age group. *Figure 15* presents the percentage of graduates in each age group who stated their 1997 job was closely related to their field of study. The highest percentage of graduates who stated their job

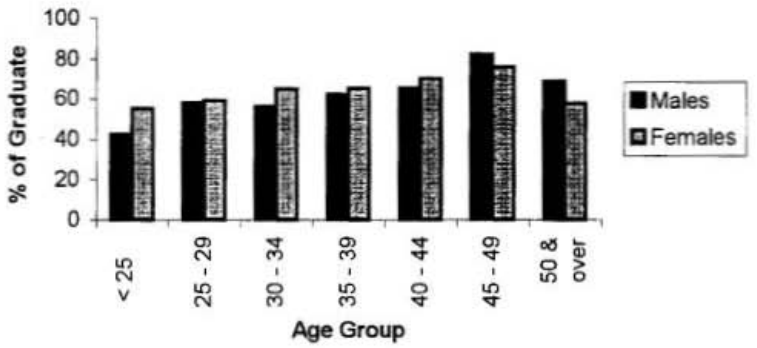

Figure 15. The percentage of 1995 Master's graduates in each age group by gender who had a job in 1997 that was very closely related to their field of study.

was very closely related to their field of study were in the 45 to 49 age group for both genders (82% of males and 76% of females). Chi-square results between age and the job-

field of study match were $x^2(12, N = 6,130) = 209.792, p < .001$ for males and $x^2(12, N = 7,438) = 273.442, p < .001$ for females.

Income.

Except for male graduates who were under age 25 and female graduates in the 25 to 29 or younger age categories, graduates of both genders were most likely to report earnings of $50,000 or more per year. Specifically, male graduates who were under age 25 were most likely to earn $40,000 to $49,999, while females who were under age 25, were equally as likely to earn $30,000 to $39,999 (28%) or $40,000 to $49,999 (28%). Female graduates who were in the 25 to 29 age group were most likely to earn $30,000 to $39,000 (27%).

Figure 16 shows the percentage of graduates in each age category who earned $50,000 or more per year. In 1997, more male than female graduates in every age category earned $50,000 or more. For both genders, the number of graduates who earned over $50,000 per year increased with age, with the exception of males who were in the 50 and over age group. Nineteen percent of male graduates who were in the under 25 age group earned $50,000 or more while, in the 45 to 49 age group, 79% did. Seventy-one percent of male graduates who were 50 or over earned $50,000 or more. For females between the age groups 35 - 39 to 40 - 44, the percentage of graduates earning $50,000 or more remained relatively stable at 47% and 48% respectively. This number grew to 64% for female graduates in the 45 to 49 and 50 or over age groups. Chi-square

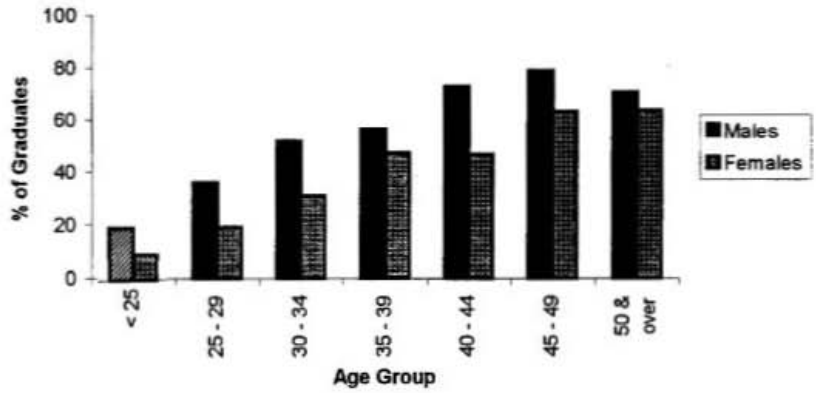

Figure 16. The percentage of 1995 Master's graduates in each age group by gender who earned $50,000 or more per year. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

results between age and 1997 earnings were $x^2(30, N = 6{,}040) = 751.843$, $p < .001$ for males and $x^2(30, N = 7{,}200) = 1166.586$, $p < .001$ for females.

Plans to Pursue a Ph.D.

Figure 17 presents the percentage of graduates in each category who planned to pursue a Ph.D. degree. For male graduates, the percentage who stated they planned to pursue a Ph.D. rose slightly from 27% in the under 25 age group to 29% in the 35 to 39 age group. Male graduates in the 40 to 44 age group showed the most interest in pursuing Ph.D.s at 35%. Still, 30% of male graduates in the 45 to 49 category indicated they planned to pursue a Ph.D. For females, the graduates with the highest percentage planning to pursue a Ph.D. were in the 30 to 34 age group at 35%. Twenty-seven

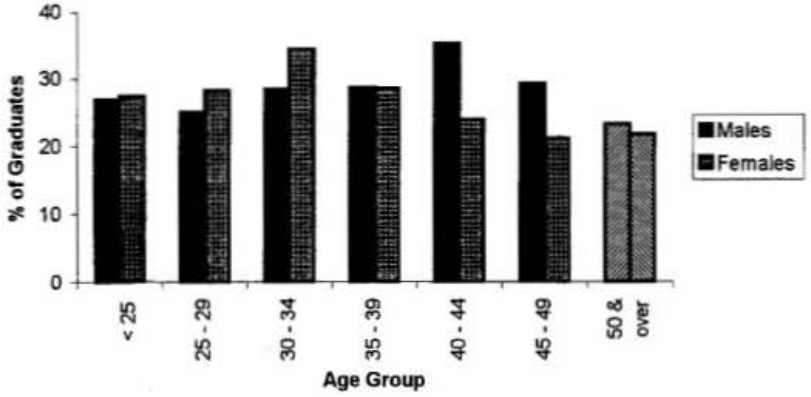

Figure 17. The percentage of 1995 Master's graduates in each age group by gender who planned to pursue a Ph.D. Note: striped bars represent marginal data estimates. Due to lower sample sizes in these age groups, estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

to 28% of female graduates under 25 to 25 - 29 indicated they planned to pursue Ph.D.'s. Twenty-one percent to 24% of females still planned to pursue Ph.D.s in the 40 - 44 to 45 - 49 age groups. Chi-square results between age and plans to pursue a Ph.D. were $x^2(6, N = 6{,}488) = 30.246$, $p < .001$ for males and $x^2(6, N = 7{,}150) = 55.948$, $p < .001$ for females.

Summary

Fifty percent of all Master's graduates were age 30 or older; however, there were higher proportions of female graduates in the older age groups. Graduates of both genders from Ontario and Quebec and males from the Western Provinces and Territories were more likely to complete Master's degrees from age 25 to 29 than in other regions.

Graduates of both genders from the Atlantic Provinces and females from the Western Provinces and Territories were distributed more equally across the age groups.

As the age of 1995 Master's graduates increased, the percentage of graduates who were female, studied part-time, had no difficulty in the job search, supervised the work of other employees, and earned $50,000 or more per year also increased. The percentage of graduates who were male; studied full-time; said the chance to earn a good income, acquire an in-depth knowledge in a field of study, or acquire the skills for a particular job were very important reasons for enrolling; and/or who utilized government student loans or scholarships decreased as age increased. Graduates of the Engineering and Applied Sciences; Agricultural and Biological Sciences; Math, Physics and Pure Sciences; and Fine and Applied Arts were concentrated in the younger age groups. Older Master's graduates were concentrated in the Humanities and Related Disciplines; Commerce, Business and Management; Social Sciences and Related Fields and Education, Recreational and Counseling Services. Male graduates in the 40 to 44 age group and females in the 30 to 34 age group showed the most interest in pursuing Ph.D.s.

Chapter V. Summary, Conclusions and Recommendations

Introduction

The results of this investigation showed many aspects of the study and post-graduation experiences of 1995 Master's graduates varied by graduation age. The following sections provide a summary and discussion of the main findings for each research question. This is followed by theoretical and practical implications of the results and recommendations for further research.

Summary and Discussion

Results showed most 1995 Master's graduates were the 25 to 29 age category; however, when age categories were grouped, over 50% of graduates were age 30 or over. The gender proportions within each age group were relatively equal in the age groups under 25 to 35 - 39; however, from the 40 to 44 age group on, the proportions of females increased to 61% and over. The cause of the greater propensity of female graduates to earn Master's degrees throughout older age groups is unknown. It may be due to different gender attitudes toward lifelong learning or distinct educational needs within disciplines that females dominate and/or other factors.

Research Question One

How did the study profiles of Master's graduates, by age group and their gender subgroups, differ by region, discipline, reasons for enrolling, study mode and/or educational funding sources?

Region.

The distributions of graduates of both genders from Quebec and Ontario and of males from the Western Provinces and Territories showed higher proportions of graduates in the 25 to 29 age category than other regions. The greater tendency for individuals to pursue Master's degrees as part of the initial education cycle in these cases may result from more competitive labour markets and the related need for higher education levels. Still, regional economic difference would not explain the gender variance noted in the Western Provinces and Territories.

Flatter distributions across the age groups were noted for graduates of both genders from the Atlantic Provinces and for females from the Western Provinces and Territories. This type of pattern may reflect Master's programs and services that better meet the needs of older learners. There may also be lower participation in Master's programs in the Engineering and Applied Sciences; Agricultural and Biological Sciences; Math, Physics and Pure Sciences; and Fine and Applied Arts in these areas, which were shown to have high concentrations of younger graduates.

Reasons for Enrolling.

A higher percentage of Master's graduates in all age groups stated that acquiring an in-depth knowledge in a field of study was a very important reason for enrolling than said acquiring the skills for a particular job or having the chance to earn a good income were very important reasons for enrolling. The percentage of graduates who said each reason for enrolling was very important decreased with age from the 25 to 29 age group on (both genders followed a similar pattern).

Nevertheless, the decrease in the percentage of graduates who said acquiring an in-depth knowledge in a field of study was a very important reason for enrolling decreased only 6% to 7%. Decreases in the percentages of graduates who stated acquiring the skills for a particular job or having the chance to earn a good income were 15% to 31%. Differences in the decreasing importance for each reason for enrolling may be related to work-related versus personal-interest reasons for enrolling. While acquiring an in-depth knowledge in a field of study could be relevant to work or personal interests, acquiring the skills for a specific job and/or having the chance to earn a good income could only be work-related. As individuals approach retirement, the importance of work-related study may decrease as a driver for lifelong learning in Master's education.

Field of Study.

The distributions of graduates in each age group by major field of study group showed significant variation. However, similarities between fields of study that were related did exist. *Figure 18* summarizes the age spans of graduates by major field of

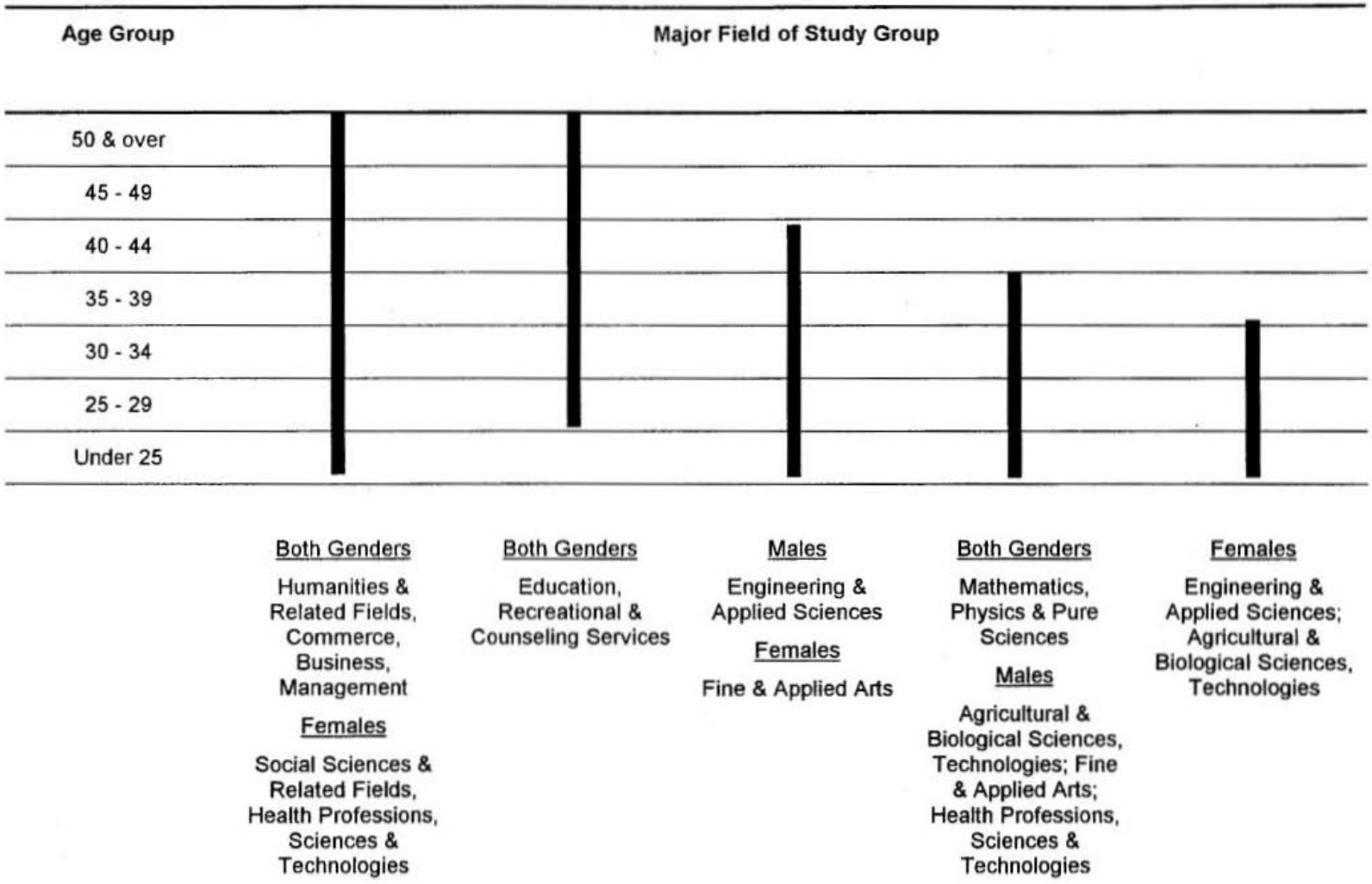

Figure 18. The age spans of 1995 Master's graduates in each major field of study group.

study group. Graduates of the Engineering and Applied Sciences; Agricultural and Biological Sciences; Math, Physics and Pure Sciences; and Fine and Applied Arts were concentrated in the younger age groups. Graduates of the Humanities and Related Disciplines; Commerce, Business and Management; Social Sciences and Related Fields and Education, Recreational and Counseling Services graduates ranged the spectrum of age groups.

When field of study is considered along with the age group and gender distributions, it is clear that older Master's graduates were concentrated in the Humanities and Related Disciplines; Commerce, Business and Management; Social Sciences and Related Fields and Education, Recreational and Counseling Services. This may have been related to Finnie and Lavoie's (1997) finding that "the Social Science and Humanities disciplines appear to have given the greatest relative advantage in terms of increased earnings to going on to a graduate degree" (p. 21).

A few exceptions to the general patterns noted above were apparent. The Health Professions, Sciences and Technologies had a proportion of female graduates in every age group, while all male graduates were age 39 or younger. This may have been due to the tendency for females and males to be concentrated in different disciplines within the Health field; for example, women dominate nursing (Finnie, 1999; Lussier 1993). The age group distribution for the Fine and Applied Arts was also different. Pockets of graduates in the 40 to 44 or younger age groups for females and the 35 to 39 age group or younger for males were evident. Gender differences in the lifelong learning patterns for

these major field of study groups may have been due to different learning needs or attitudes toward lifelong learning in female or male dominated professions.

Study Mode.

As graduation age increased, the percentage of graduates who studied full-time decreased and the percentage of graduates who studied part-time increased. This likely resulted from the need or choice to combine work and study by older graduates. The tendency for older adults to study part-time is reflective of other studies of adult education and training (CMEC, 1997; Tuijnman, 2001).

Educational Funding Sources.

The use of employment earnings as a main educational funding source increased with age for both men and women, while the use of scholarships and government loans decreased. The use of employment earnings did not vary as significantly with age as the use of scholarships and government loans. It may have been that younger graduates considered summer employment earnings a main income source.

Research Question Two

How did the post-graduation profiles of Master's graduates, by age group and their gender sub-groups, differ by accumulated debt, job search experiences, job characteristics, job–education match, job satisfaction, earnings and/or plans to pursue further formal education?

Accumulated Debt.

Of the graduates who accessed government student loans, most borrowed $10,000 to $29,999. For male borrowers, the percentage who accumulated $10,000 to $29,999 in debt increased from the 25 to 29 age group to the 40 to 44 age group. For female borrowers, the percentage of graduates who accumulated $10,000 to $29,999 in debt was highest in the 25 to 29 and 40 to 44 age categories. Graduates up to the 40 to 44 age group may more often borrow higher amounts to support family costs. More research on this topic could identify why higher amounts are more common and whether the current funding structures are adequate for graduates in this age range.

Job Search Experiences.

As graduation age increased, job search experiences improved. The percentage of graduates that had no difficulty finding a job related to their field of study, that paid well enough or in an area they wanted to live, increased with age for men to age 50 or over and to the 45 to 49 age group for women. These data indicate that experience as well as education remains an important labour market advantage.

Job Characteristics.

The percentage of graduates who were employed increased as graduation age increased until the 45 to 49 age group. One exception for both genders was the 35 to 39 age group at which a slight decrease was apparent. The percentage of employed graduates who were working full-time in 1997 also increased with age for both genders until the 45 to 49 age group. Decreases in the percentages of graduates working full-time in the 50 and over age group may have been due to retirement.

Male graduates were more likely than females to be working full-time in every age group. The percentage of graduates who supervised the work of others also increased with age until the 45 to 49 age category for males. For females, a slight decrease was notable in the 30 to 34 age group; however, the percentage of female graduates who supervised the work of others continued to increase from that point to the 50 and over age group. The decreased percentage of female graduates in the 30 to 34 age category who supervised the work of others may have been due to increased child-care responsibilities for this age group. The higher proportion of female graduates who were supervising the work of other employees in the 50 and over age group may indicate that females retire at later ages than males.

Job-education Match.

The percentage of graduates who stated their 1997 job was very closely related to their field of study increased with age to the 45 to 49 age group. However, the percentage of graduates who had more education than specified for their 1997 job also increased with age. This finding mirrors Frenette (2000) who noted that high percentages of Master's graduates held positions for which less than a Master's degree was required. Nonetheless, Master's graduates indicated they still used their skills to a large extent and did not suffer decreases in earnings (Frenette, 2000).

Income.

The percentage of graduates in each age group who earned $50,000 or more per year increased from the under 25 to the 45 to 49 age group. The high average earnings associated with earning a Master's degree in 1995 (Taillon & Paju, 1999) may, therefore, have been largely due to the earning levels of older graduates in the Humanities and Related Disciplines; Commerce, Business and Management; Social Sciences and Related Fields and Education, Recreational and Counseling Services. Male graduates earned more than female graduates in every age category.

Plans to pursue a Ph.D.

Less than 35% of graduates in every age category planned to pursue a Ph.D. Males in the 40 to 44 age group and females in the 30 to 34 age group were the most likely to state they planned to pursue a Ph.D. One possible explanation is that males may more often consider earning a Ph.D. as a second career choice whereas females may most often intend to pursue a Ph.D. as an initial career choice. Again, further research would be required to determine whether this and/or other factors contribute to the gender difference.

Conclusions

Figure 19 presents a lifelong learning profile of the key findings for 1995 male Master's graduates while *Figure 20* presents a profile for females. As the age of 1995 Master's graduates increased, the percentage of graduates who were female, studied part-time, had no difficulty in the job search, supervised the work of other employees and earned $50,000 or more per year also increased. The percentage of graduates who were

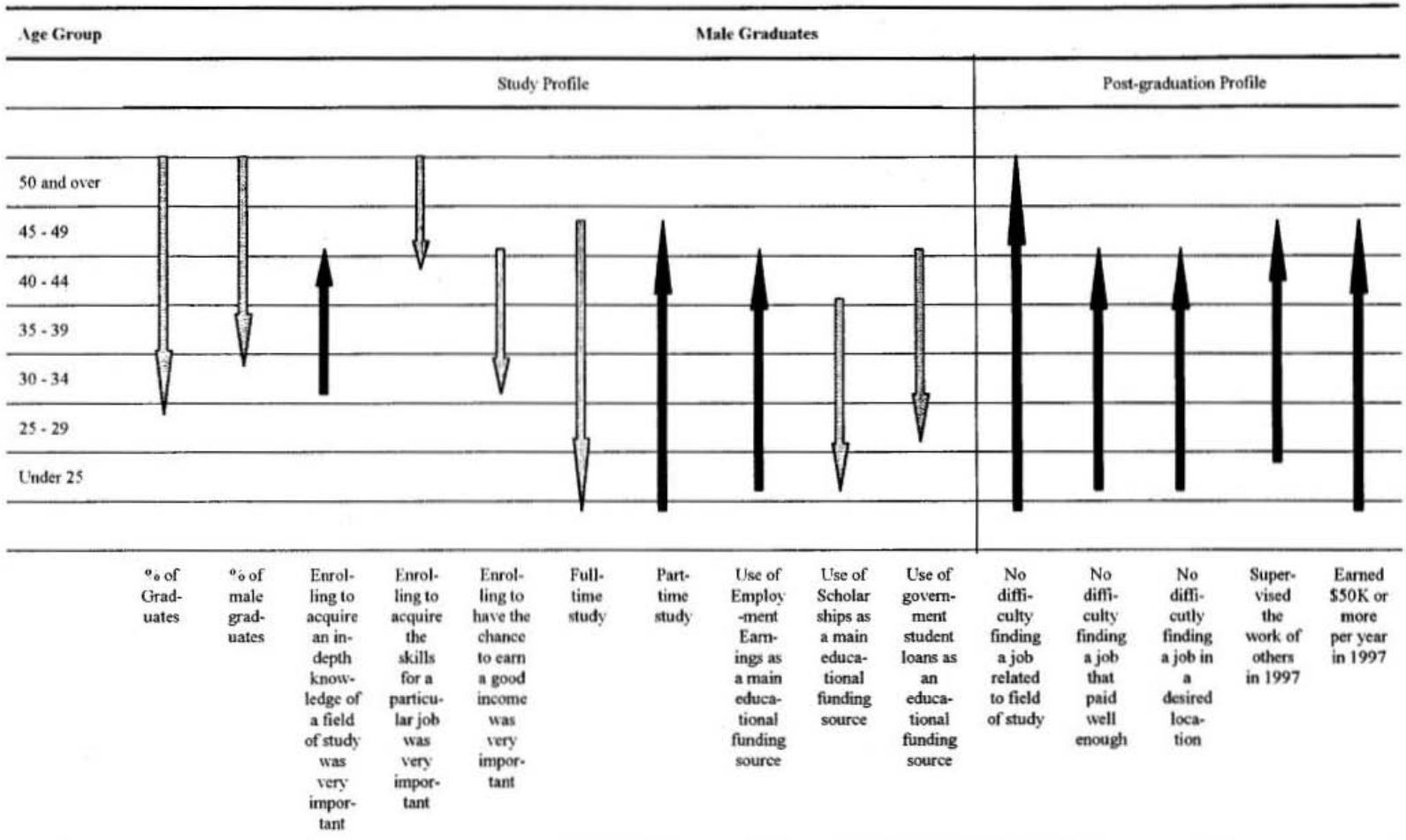

Figure 19. The study and post-graduation profile of 1995 male Master's graduates. Upward arrows show trends that increased as age increased. Downward arrows show trends that decreased as age decreased.

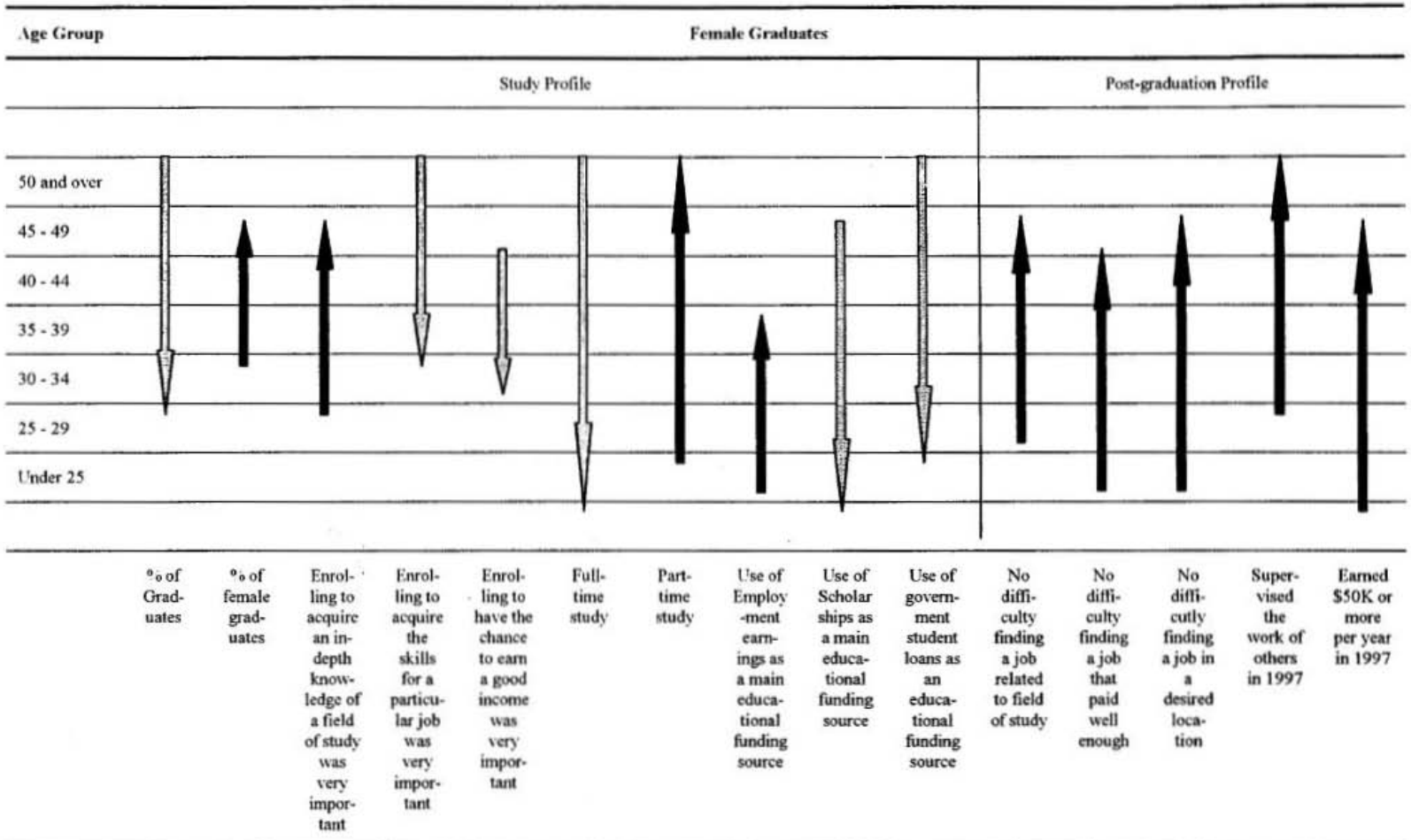

Figure 20. The study and post-graduation profile of 1995 male Master's graduates. Upward arrows show trends that increased as age increased. Downward arrows show trends that decreased as age decreased.

male; studied full-time; said the chance to earn a good income, acquire an in-depth knowledge in a field of study, or acquire the skills for a particular job were very important reasons for enrolling; and/or who utilized government student loans or scholarships, decreased as age increased. Some variation between gender profiles existed.

Theoretical Implications of the Results

The significant relationships between the age group and dependent variables for both genders used in this study is supportive of stage theories (Erikson, Havighurst and Levinson as cited in Lemme, 1995) and/or indicative of cohort effects (Morgan & Kunkel, 2001). Nonetheless, differences between the same age groups originating from different regions of Canada and/or in different fields of study, indicate that age alone cannot predict the propensity of an individual to complete a Master's degree. Differences in lifelong patterns for different regions and fields of study may be due to varying social age conceptions (Neugarten, 1968 as cited in Lemme, 1995). Alternatively, the drivers for lifelong learning, such as freer trade and technology (Hatton, 1997), may affect various disciplines and regions diversely.

Interestingly, the major field of study groups that least reflected a demand for lifelong learning in Master's education (the Science related disciplines) are fields of study that are closely associated with technological advancement (Finnie & Lavoie, 1997). It would, therefore, appear that technology was not a driver for lifelong learning in Master's education for 1995 graduates. The high percentage of graduates who held supervisory positions two years after graduation may indicate that increased requirements for

knowledge workers (Beck, 1998) is a driver for multi-age individuals to pursue Master's degrees.

Practical Implications of the Results

The results of this study are an indication that increases in the numbers of individuals earning Master's degrees are not a case of "too little too late" (Finnie, 1999, p. 21). Particularly for older graduates, trends showed positive labour market experiences were attainable within two years of graduation. Specifically, as graduation age increased so did the chance of finding a close job-education match in a desired location, supervising the work of other employees and earning $50,000 or more per year. A significant role of Master's education in the knowledge-based economy may be to provide a high level educational experience, which, when combined with prior experience, is effective training for supervisors and emerging leaders. Data on older graduates, though, can only be related to the Education, Social Sciences, Humanities and Commerce disciplines. For the younger Science graduates, the role of the Master's degree appears be more of an entry-level qualification for the workplace or Ph.D.

Other findings showed fewer older graduates used scholarships as main funding sources for their education. This may have been due to older graduates not applying; however, there may also be insufficient scholarship support for older graduates. On the other hand, older graduates were more likely to be in a position to rely on employment earnings as a main funding source and were less likely to borrow government student loans. This is another advantage of considering a Master's degree at an older age.

For universities, less than 30 percent of males and 35 percent of females in the 35 to 39 or younger age groups planned to pursue a Ph.D. Nonetheless, females in the 30 to 34 age category and males in the 40 to 44 age category showed the highest percentages of graduates who planned to pursue Ph.D.s. This information could be integrated into strategic planning and marketing toward attracting individuals of these ages to academic careers. Also regarding lifelong learning trends and practices, older graduates were much more likely to study part-time. Establishing part-time study programs in more disciplines could, therefore, be used to attract more multi-aged students to the Science-related disciplines and/or Ph.D. programs.

Recommendations for Further Research

Since this study investigated characteristics of the study and post-graduation experiences by multi-aged Master's graduates, it would also be relevant to investigate the experiences and positions of such individuals prior to enrolling. For example, what were the earnings and supervisory capacities of individuals who had work experience before enrolling in a Master's program? Did earning a Master's degree improve earnings and/or the opportunity to supervise the work of other employees? Similarly, a longitudinal study of Master's graduates' experiences could be undertaken. Building on the knowledge that older graduates had less difficult job searches, were more often employed as supervisors, and more often earned $50,000 or more per year -- how long after graduation do younger Master's graduates experience these effects, or do they? What is the optimal age to pursue the Master's degree and gain the maximum benefit? Lastly, analyzing the effects of

different Master's program characteristics, such as internships and thesis vs. non-thesis options, on post-graduation experiences could also provide individuals and universities with better planning information.

Summary

The results of this study showed several aspects of Master's graduates' study and post-graduation experiences varied by age group. Such aspects included reasons for enrolling, study mode, educational funding sources, accumulated debt, job search experiences, job-education match, job characteristics, income and plans to pursue a Ph.D. Greater percentages of older graduates experienced ease in the job search, a close job/field-of-study match, earnings of $50,000 or more, and supervisory capacities at work two years after graduation. It is not known when or if younger graduates attain these labour market characteristics following graduation. Graduates of the Engineering and Applied Sciences; Agricultural and Biological Sciences; Math, Physics and Pure Sciences; and Fine and Applied Arts were concentrated in the younger age groups. Older Master's graduates were concentrated in the Humanities and Related Disciplines; Commerce, Business and Management; Social Sciences and Related Fields and Education, Recreational and Counseling Services (see *Figure 18*). Findings from this study could be used to encourage older candidates to pursue Master's degrees and universities to investigate providing more part-time study courses/programs and scholarships to attract older students to Science-related and Ph.D. programs.

Technology does not appear to have been a driver for lifelong learning in Master's education for 1995 graduates. However, the need to train older, more experienced employees to be supervisors may be a significant function of the Master's degree in the knowledge-based economy. Further study of job and income status prior to graduation and longitudinal study of the labour market experiences of younger Master's graduates following graduation are recommended. Additionally, the effects of differing components in Master's programs, such as theses and internships, on post-graduation labour market experiences may also be beneficial.

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APPENDICES

Appendix A

Table A1

Master's Degrees Awarded in Canada by Discipline, Degree and Sex 1990 - 1998

Discipline	Male	Female	Total	% Female
Humanities Disciplines				
Asian & Slavic Studies	232	309	541	57.1
Classics	135	160	295	54.2
Comparative Literature	87	182	269	67.7
English	1,555	2,578	4,133	62.4
Fine Arts	1,519	2,363	3,882	60.9
French	592	1,223	1,815	67.4
History	1,850	1,503	3,353	44.8
Linguistics	258	598	856	69.9
Mediaeval Studies	100	130	230	56.5
Modern Languages	251	580	831	69.8
Philosophy	1,075	485	1,560	31.1
Religious Studies	698	535	1,233	43.4
Other Division "A"	541	824	1,365	60.4
Total Humanities	8,893	11,470	20,363	56.3
Social Science Disciplines				
Anthropology	411	712	1,123	63.4
Archaeology	47	41	88	46.6
Architecture	565	305	870	35.1
Business	22,743	11,797	34,540	34.2
Canadian Studies	140	263	403	65.3
Economics	3,037	1,461	4,498	32.5
Education	8,358	20,161	28,519	70.7
Geography	1,052	736	1,788	41.2

Social Science Disciplines Cont.

Discipline	Male	Female	Total	% Female
Journalism	266	321	587	54.7
Law	1,081	939	2,020	46.5
Library	970	2,889	3,859	74.9
Physical Education	1,119	1,127	2,246	50.2
Political Science	2,500	1,820	4,320	42.1
Psychology	1,364	3,766	5,130	73.4
Public Administration	1,979	1,907	3,886	49.1
Social Welfare	1,126	4,577	5,703	80.3
Sociology	794	1,423	2,217	64.2
Urban Planning	1,099	898	1,997	45.0
Other Division "B"	968	1,951	2,919	66.8
Total Social Sciences	49,619	57,094	106,713	53.5

Natural and Applied Science Disciplines

Aerospace Science	374	37	411	9.0
Astronomy	74	25	99	25.3
Chemical Engineering	1,064	478	1,542	31.0
Chemistry	1,105	730	1,835	39.8
Civil Engineering	2,454	625	3,079	20.3
Computer Science	2,639	767	3,406	22.5
Electrical Engineering	3,758	544	4,302	12.6
Engineering Design	177	57	234	24.4
Environmental Studies	1,114	1,083	2,197	49.3
Forestry	521	206	727	28.3
Geology	1,159	548	1,707	32.1
Industrial Engineering	353	128	481	26.6
Landscape Architecture	123	81	204	39.7

Natural & Applied Sciences Cont.				
Discipline	Male	Female	Total	% Female
Mathematics	1,635	774	2,409	32.1
Mechanical Engineering	2,306	304	2,610	11.6
Metal Science	306	67	373	18.0
Mining Engineering	296	64	360	17.8
Physics	1,611	341	1,952	17.5
Other Natural & Applied Sciences	2,963	673	3,636	18.5
Total Natural & Applied Sciences	24,032	7,532	31,564	23.9
Life Science Disciplines				
Agriculture	310	293	603	48.6
Anatomy	112	120	232	51.7
Animal Science	248	200	448	44.6
Biochemistry	374	362	736	49.2
Biology	1,415	1,425	2,840	50.2
Biophysics	123	74	197	37.6
Botany	117	145	262	55.3
Clinical Medical Science	364	440	804	54.7
Dental Specialities	112	71	183	38.8
Epidemiology	612	1,362	1,974	69.0
Food Science	136	542	678	79.9
Genetics	87	138	225	61.3
Hospital Administration	290	545	835	65.3
Marine Science	321	198	519	38.2
Medical Science	502	630	1,132	55.7
Microbiology	464	562	1,026	54.8
Neurosciences	24	28	52	53.8
Nursing	60	1,765	1,825	96.7

Life Science Disciplines Cont.				
Discipline	Male	Female	Total	% Female
Pathology	106	116	222	52.3
Pharmacy	502	887	1,389	63.9
Physiology	333	285	618	46.1
Plant Science	421	294	715	41.1
Soil Science	180	97	277	35.0
Surgery	107	30	137	21.9
Toxicology	8	9	17	52.9
Veterinary Science	280	243	523	46.5
Zoology	397	306	703	43.5
Other Life Sciences	332	2,055	2,387	86.1
Total Life Sciences	8,337	13,222	21,559	61.3

Source: CAGS, 2000

Appendix B

Statistics Canada's Major Field of Study Groups

Statistics Canada developed codes for major discipline groups as part of the University Student Information System (USIS). "These codes facilitate comparison of National Graduates Survey (NGS) findings with those of other Statistics Canada surveys and the Census of Population" (University of Western Ontario, 2001, Appendix B, ¶ 1). The disciplines included in each Statistics Canada major field of study group that was used in this study are as follows.

Educational, Recreational and Counseling Services.

Teaching

Educational support

Physical education and recreation

Travel and tourism

Counseling services

Personal development

Education – other

Fine and Applied Arts.

Fine arts

Music

Performing arts

Commercial and promotional arts

Graphic arts, audiovisual arts and design

Other applied arts

Humanities and Related Fields.

Classics, classical and dead languages

History

Library and records science

Mass media studies

English language and literature

French language and literature

Other languages and literature

Philosophy

Religious studies

Other humanities technologies

Second language training

Social Sciences and Related Fields.

Anthropology

Archeology

Area studies (non-languages or literatures)

Economics

Geography

Law and jurisprudence technologies

Man/ environment studies

Political science

Psychology

Sociology

Social work and social services

Other social sciences

Commerce, Management and Business Administration.

Specialized administration studies

Commerce/ business/ management

Secretarial science - general fields

Agricultural and Biological Sciences/ Technologies.

Agricultural science

Agricultural technology

Animal science technologies

Biochemistry

Biology

Biophysics

Botany

Household science and related fields

Veterinary medicine/science

Zoology

Other natural resource technologies

Food processing technologies

Engineering and Applied Sciences.

Architecture

Aeronautical and aerospace engineering

Chemical engineering

Civil engineering

Design/systems engineering

Electronic and electrical engineering

Industrial engineering

Mechanical engineering

Mining and metallurgical engineering

Engineering - other

Engineering Science

Forestry, fisheries and wildlife management

Landscape architecture

Health Professions, Sciences and Technologies.

Dentistry

Medicine - general

Medicine - basic medical science

Medical specialties (non-surgical)

Para-clinical sciences

Surgery and surgical specialties

Nursing

Nursing assistance

Optometry

Pharmacy and pharmaceutical sciences

Public health

Rehabilitation medicine and therapy

Medical laboratory and treatment technologies

Medical equipment and prosthetics

Other health professions, sciences and

Mathematics and Physical Science.

Computer science

Chemistry

Geology

Mathematics, actuarial science and applied mathematics

Metallurgy and materials science

Meteorology

Oceanography

Physics

Table C1

Cross-tabulation Results between Age Group and Gender Independent Variables and each Dependent Variable (%).

Variable	Gender	Sample Size	Age Group							
			Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 & over	Total (%)
Age Group										
	M	2749	11	39	20	13	9	5	3	100
	F	2952	11	32	18	13	12	9	5	100
Gender	M	2749	47	52	50	48	39	30	33	
	F	2952	53	48	50	52	61	70	67	
Total			100	100	100	100	100	100	100	
STUDY PROFILE										
Region of Residence Prior to Enrolling										
	M	2693								
	F	2892								
Atlantic Provinces										
	M		8*	26	20*	20*	10*	12*	-	96'
	F		10*	18	19	17*	16*	17*	-	97'
Quebec										
	M		10	38	19	16	11	4*	3*	98'
	F		12	34	16	11	13	10	4*	96'
Ontario										
	M		15	43	19	11	6	4*	3*	98'
	F		11	35	19	12	9	8	7	94'

Variable	Gender	Sample Size	Age Group							
			Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 & over	Total (%)
Western Provinces & Territories										
	M		7	35	23	13	11	7	3*	96'
	F		9	23	19	17	15	11	7	94'
Reasons for Enrolling										
To acquire an in-depth knowledge in a field of study was very important										
	M	2736	59	64	59	64	66	63	62	†
	F	2937	71	65	66	69	71	71	69	†
To have the chance to earn a good income was very important										
	M	2734	46	52	45	44	37	36	21*	†
	F	2936	42	52	48	42	31	38	31	†
To acquire the skills for a particular job was very important										
	M	2732	53	57	55	60	53	45	36	†
	F	2930	63	62	59	57	61	61	48	†
Field of Study										
Education, Counselling, Recreational Services										
	M	324	-	19	16	20	21	17	8*	93'
	F	628	-	11	21	18	22	19	9	91'
Fine & Applied Arts										
	M	26	-	-	47*	39*	-	-	-	86'
	F	48	16*	-	35*	-	16*	-	-	67'

Variable	Gender	Sample Size	Age Group							
			Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 & over	Total (%)
Humanities & Related Fields										
	M	252	17	35	16	11*	10*	5*	6*	100
	F	443	14	34	16	10	6*	9	11	100
Social Sciences & Related Fields										
	M	390	16	40	19	12	7*	3*	-	97'
	F	637	11	41	16	10	12	7	2*	99'
Commerce, Management, Business Administration										
	M	590	12	34	21	15	10	5*	3*	100
	F	416	17	38	16	13	7*	6*	3*	100
Agricultural & Biological Sciences/Technologies										
	M	161	10*	55	22*	12*	-	-	-	99'
	F	162	19*	52	19*	-	-	-	-	90'
Engineering & Applied Sciences										
	M	555	8*	56	22	10	5*	-	-	101'
	F	116	22*	49	21*	-	-	-	-	92'
Health Professions, Sciences & Technologies										
	M	105	9*	43	27	12*	-	-	-	91'
	F	381	12*	35	20	15	9*	5*	4*	100
Mathematics & Physical Sciences										
	M	328	17*	53	19	8*	-	-	-	97'
	F	99	18*	48	20*	14*	-	-	-	100

Variable	Gender	Sample Size	Age Group							
			Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 & over	Total (%)
Study Mode										
	M	2749								
	F	2951								
Full-time										
	M		95	80	57	48	39	30	39	
	F		95	81	53	50	32	30	23	
Part-time										
	M		-	9	24	35	47	59	52	
	F		-	6	27	35	47	58	69	
Combination										
	M		5*	11	20	18	15*	11*	-	
	F		4*	13	20	15	21	12*	8*	
Total	M		100	100	101'	101'	101'	100	91'	
	F		99'	100	100	100	100	100	100	
Educational Funding Sources										
Employment Earnings were one of three main funding sources										
	M	2734	66	67	72	76	76	67	79	†
	F	2937	56	66	68	75	70	77	74	†
Scholarships were one of three main funding sources										
	M	2732	32	30	18	14	14*	9*	-	†
	F	2937	32	24	18	16	11*	10*	-	†

Variable	Gender	Sample Size	Age Group							
			Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 & over	Total (%)
Grants/Bursaries were one of three main funding sources										
	M	2716	6*	8*	5*	4*	-	-	-	†
	F	2926	5*	4*	6*	5*	3*	5*	-	†
Non-government student loans were one of three main funding sources										
	M	2715	-	-	-	-	-	-	-	†
	F	2916	-	1*	-	-	-	-	-	†
Borrowed Government Student Loans										
	M	2726	54	53	44	38	23	30	14*	†
	F	2930	57	57	44	32	23	17	9*	†
POST-GRADUATION VARIABLES										
Accumulated Debt in Government Loans										
	M	880								
	F	1012								
$0										
	M		8*	14	11*	13*	-	35*	17	
	F		6*	15	22	21	23*	29*	-	
$1000 - $1999										
	M		-	-	-	-	-	-	-	
	F		-	-	-	-	-	-	-	

Variable	Gender	Sample Size	Age Group							
			Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 & over	Total (%)
$2000 - $2999										
	M		-	-	-	-	-	-	-	
	F		-	-	-	-	-	-	-	
$3000 - $3999										
	M		8	3	-	-	-	-	-	
	F		-	2	-	-	-	-	-	
$4000 - $4999										
	M		-	-	-	-	-	-	-	
	F		-	4	-	-	-	-	-	
$5000 - $9999										
	M		15	21	23	14	-	-	-	
	F		26	14	21	26	15*	18*	-	
$10,000 - $29,999										
	M		60	51	59	66	69	-	-	
	F		48	59	51	44	57	40	36*	
$30,000 - $99,995										
	M		-	7*	-	-	-	-	-	
	F		10*	5*	-	7*	-	-	-	
Totals										
	M		91'	96'	93'	93'	69'	35'	17'	
	F		90'	99'	94'	98'	95'	87'	36'	
Job Search Experiences										
No difficulty finding a job related to field of study										
	M	2092	32	37	42	51	61	62	79	†
	F	2300	37	35	42	49	50	61	53	†

Variable	Gender	Sample Size	Age Group							
			Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 & over	Total (%)
No difficulty finding a job that paid enough										
	M	2076	30	30	34	43	51	47	68	†
	F	2259	24	31	37	48	41	53	43	†
No difficulty finding a job in a preferred location										
	M	2082	46	43	39	55	54	53	80	†
	F	2276	44	44	45	54	54	60	53	†
Job Characteristics										
Employed										
	M	2749	76	82	85	82	91	91	71	†
	F	2952	77	83	87	87	91	87	82	†
Employed Graduates Working Full-time										
	M	2749	92	92	90	94	94	98	88	†
	F	2952	83	82	82	82	87	84	74	†
Supervised the work of other employees										
	M	2244	45	41	46	52	54	69	21*	†
	F	2482	31	35	31	37	40	46	51	†
Job – Education Match										
	M	2749								
	F	2952								
Graduate had more education than specified for 1997 job										
	M		33	39	38	42	45	52	49	†
	F		31	35	42	45	43	43	45	†

Variable	Gender	Sample Size	Age Group							
			Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 & over	Total (%)
Graduate had the same level of education as specified for 1997 job										
	M		27	25	24	22	24	18*	-	†
	F		26	28	21	33	22	28	17*	†
1997 job was very closely related to field of study										
	M	1977	42	58	56	62	65	82	68	†
	F	2237	55	59	65	65	70	76	58	†
Earned an income of $50, 000 or more per year (1997)										
	M	1905	19	36	52	57	73	79	71	†
	F	2199	9*	19	31	48	47	64	64	†
Plan to pursue a Ph.D.										
	M	2086	27	25	29	29	35	29	23*	†
	F	2216	27	28	35	29	24	21	22*	†

- Indicates that there were too few observations to report

* Due to low cell counts, these estimates have coefficients of variation of 16.6 to 33.3 and may have a high error level.

† These totals do not sum to 100% since only results of the specific response indicated are reported. 100% - the reported result = all other results for that gender.

' These totals may not sum to 100% due to rounding and/or the absence of cell counts of unreleasable quality.